TECHNOLOGY DEPT.

DECEMBER • 1959

Metal Products Manufacturing

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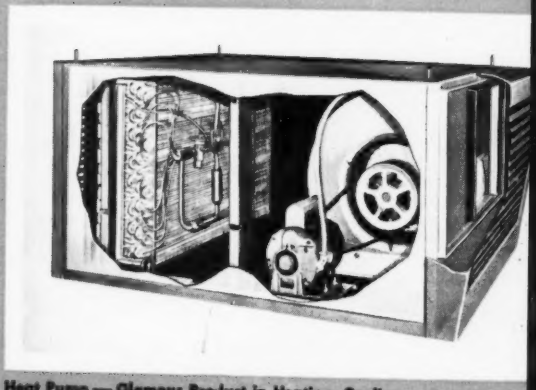
V.16 #12

Serving the Appliance and Fabricated Metal Products Industry



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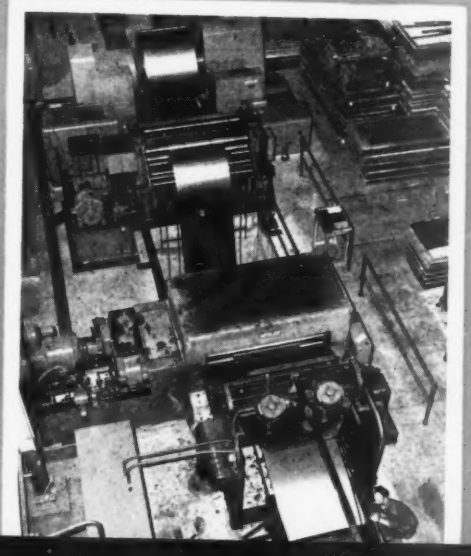

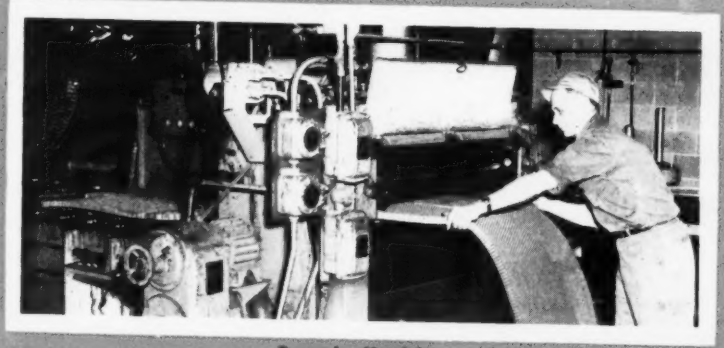

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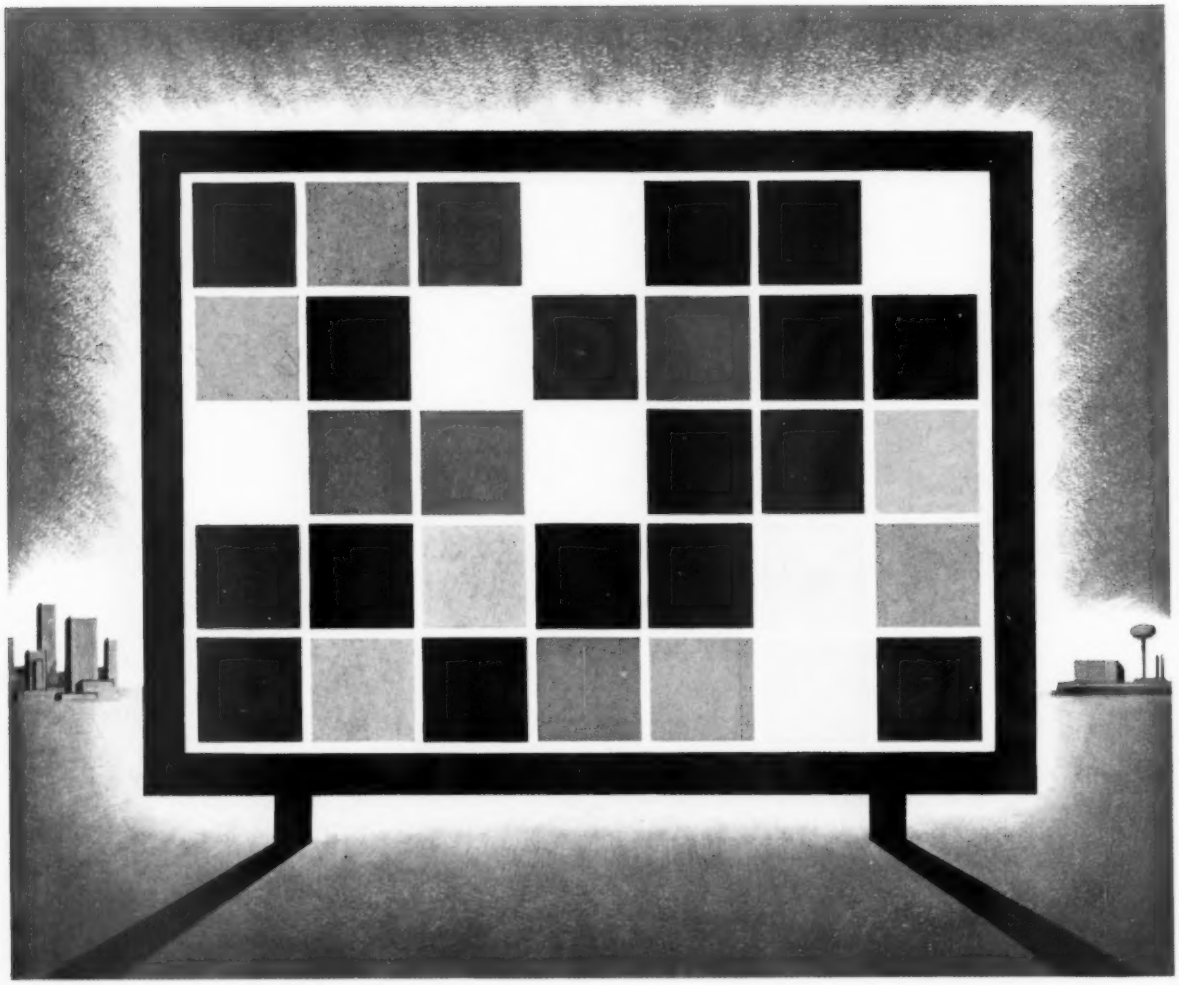

How Shell Chemical serves the surface coating industry

Shell Chemical has maintained for many years an active program of practical and theoretical research in oxygenated solvents and Epon® resins for surface coatings.

The result has been a better understanding of the effect of solvents on film formers—leading to superior performance and greater economy in surface coating formulations.

Epon resins are still another important outgrowth of Shell research. Surface coatings based on Epon resins are among the hardest, toughest, and most resistant to the attack of chemicals and corrosion ever developed.

Shell Chemical's Technical Service Laboratory offers you assistance in solving surface coating formulation problems. Write or phone your nearest Shell Chemical district office if we can be of assistance.

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Di-Tertiary Butyl Peroxide
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Ethyl Amyl Ketone
Glycerine
Hexylene Glycol
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Isopropyl Ether
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Methyl Isobutyl Ketone
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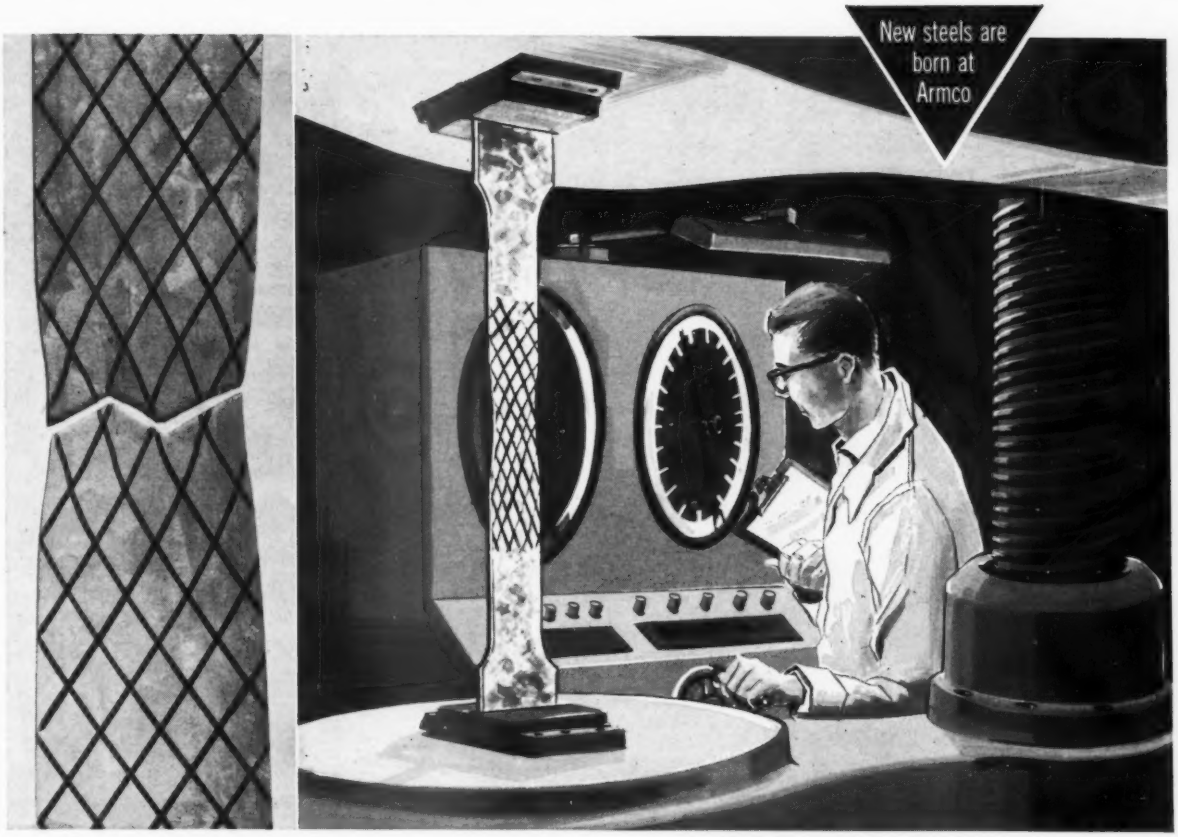
SHELL

IN TENSION TESTS AS IN APPLIANCE FABRICATION...



Zinc coating on Armco ZINCGRIP stretches, but doesn't flake or peel

Great force is required to pull apart a tensile specimen of Armco ZINCGRIP® Steel. But even when the base metal breaks, the zinc coating holds tightly—right up to the edge of the fracture.

On the specimen pictured, grid lines show stretch and coating adherence. It's easy to see that the coating on this specimen did not flake or peel, despite elongation of about 70 per cent in the fracture zone.

PAYS OFF IN FABRICATION

Although tensile tests demonstrate the remarkable ductility of the rust-resisting coating on Armco ZINCGRIP, the real payoff comes in fabrication. For example, you can draw, form, pierce, bend, or stamp appliance parts from Armco ZINCGRIP Steel with the assurance of durable zinc protection *after* working.

For complete information on rust-resistant, workable Armco ZINCGRIP, fill in and mail the coupon.

ARMCO STEEL CORPORATION
2969 Curtis Street, Middletown, Ohio

Please send complete information about Armco ZINCGRIP Steel. We make

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Title_____

Firm_____

Street_____

City_____ Zone____ State_____

ARMCO STEEL

Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation

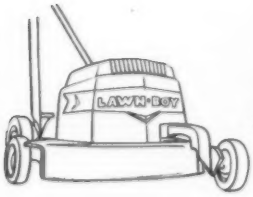
For fun and low-cost personal transportation—and for economical, efficient light hauling in commerce and industry—the going is great on a Cushman Motor Scooter or Truckster.

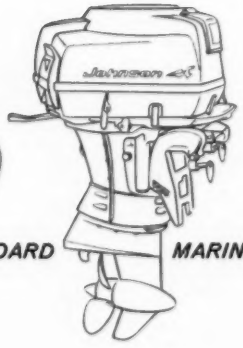
They're products of ***Outboard Marine Corporation.*** *They're out in front in glamorous styling, too. That's where Cook's comes in—with paints that provide the finishing touch of beauty and durability.*

Cook's paints have long been used by Cushman Motors and Lawn-Boy Mower divisions of Outboard Marine. Now the quality, buy-appeal and production economies of Cook's finishes have been extended to the Gale Products and Johnson Motors divisions of the company.

How about your product? Find out how Cook's may help step up sales of your product... help save you production dollars.

Cook's rides with *CUSHMAN* in a beautiful finish





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COOK'S PAINTS

Cook Paint & Varnish Company
North Kansas City, Mo.
Factories:
Kansas City • Detroit
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DECEMBER • 1959
VOL. 16 • NO. 12

MPM

(including finish)

MONTHLY TRADE PUBLICATION
Established January 1944
Published by
DANA CHASE PUBLICATIONS, INC.
York Street at Park Avenue, Elmhurst, Illinois
Telephones • TErrace 4-5280 • TErrace 4-5281

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is $8.00 per year, domestic. To all other countries $10.00 per year (U.S. funds). Single copies, $1.00.

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DANA CHASE PUBLICATIONS, INC.
PRINTED IN U.S.A.
Accepted as a controlled circulation publication at Aurora, Illinois.

Editor and Publisher • DANA CHASE
Associate Editor • WM. N. LARSEN
Associate Editor • LEONARD ERNST
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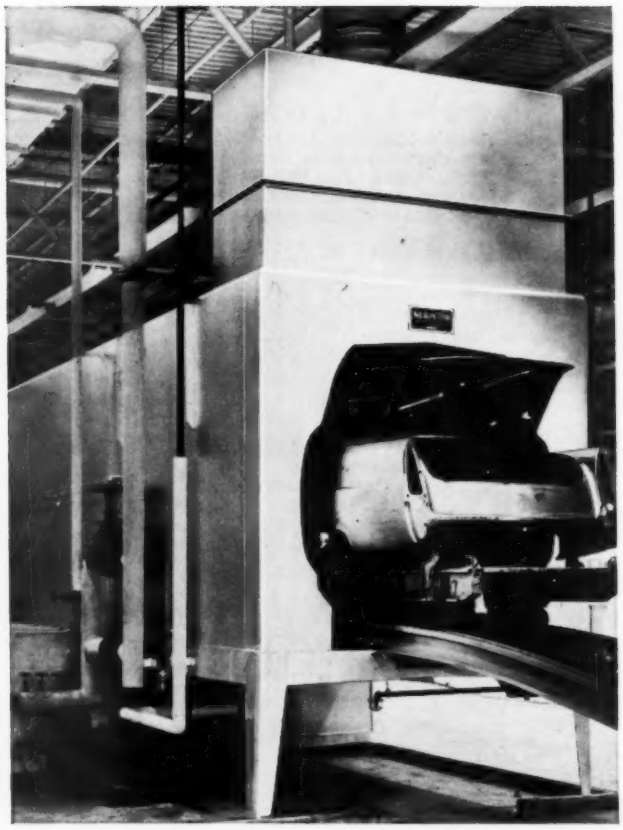

You can't help cashing in when you have a Cold Bonderite System working for you. The difference in heat required shows up at once as a reduction in operating costs.

You operate cleaner, rinse and Bonderite 40° to 75° cooler than in conventional phosphating installations. Automatically, fuel costs go down!

There are other automatic savings built into Cold Bonderite: reductions in water use, less consumption of electrical power and elimination of exhaust and ventilating equipment. Servicing and maintenance are quicker and easier, too, saving labor and downtime.

All these add up to important money savings—thousands of dollars a year in

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phosphating line!

arge installations, proportionately great n smaller plants.

Complete line of Cold Bonderite Systems

You aren't limited to a single type of phosphate coating in choosing your Cold Bonderite System. Parker has cold iron phosphates, cold zinc phosphates, and products for low temperature 3-stage production washers. And spray or immersion applications are available.

Cold Bonderite chemicals come to you n safe liquid form, for easy build-up and replenishing and to insure against operator error in maintaining most efficient chemical balance for continuous operation.

These chemicals have built-in accelerators for *fastest* coating action and are exclusively formulated to meet the requirements of today's production lines.

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Results produced by Cold Bonderite Systems equal the highest quality Bonderite standards. Chemical costs are as economical as conventional "hot" phosphating systems so all savings go right into profits. There are no changes in equipment needed, no new techniques to teach your crew.

With no trouble at all, you can make the switch from hot phosphating to a Cold Bonderite System—and start automatic savings right away!

Call in the Parker man now!

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ONDERITE corrosion resistant paint base | BONDERITE and BONDERLUBE aids in cold forming of metals | PARCO COMPOUND rust resistant | PARCO LUBRITE—wear resistant for friction surfaces | TROPICAL—heavy duty maintenance paints since 1883

**Bonderite, Bonderlube, Parco, Parco Lubrite—Reg. U.S. Pat. Off.*

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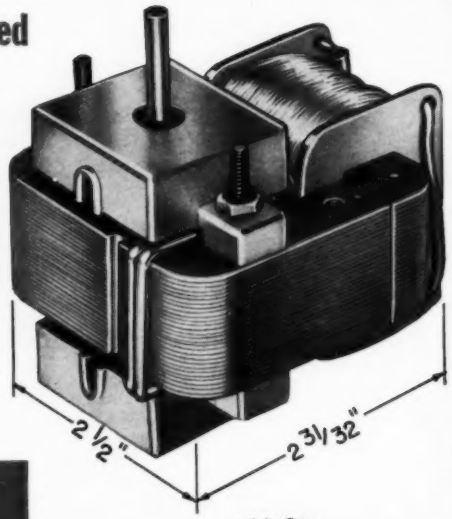

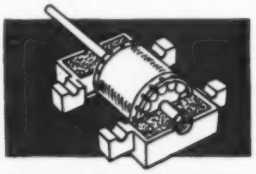

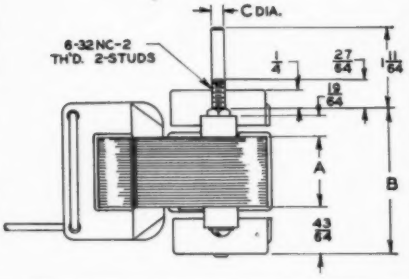

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H-4-CW H-4-CCW	1/400	0.75	1.00	3350	.200	9.0	1/2"	1 27/64"	.1817"	1.5
H-5-CW H-5-CCW	1/200	1.25	1.80	3350	.250	11.0	5/8"	1 45/64"	.1817"	1.6
H-6-CW H-6-CCW	1/150	1.40	2.20	3375	.270	12.5	3/4"	1 53/64"	.1817"	1.8
H-7-CW H-7-CCW	1/110	1.55	2.50	3400	.290	13.0	7/8"	1 61/64"	.1817"	1.9
H-8-CW H-8-CCW	1/100	1.85	3.00	3400	.300	15.0	1"	2 1/64"	.1817"	2.0
H-9-CW H-9-CCW	1/80	2.00	3.50	3425	.335	17.5	1 1/8"	2 13/64"	.1817"	2.4
H-12-CW H-12-CCW	1/70	2.20	4.35	3450	.390	18.0	1 1/2"	2 25/64"	.1817"	2.8
H-14-CW H-14-CCW	1/55	2.30	4.70	3490	.395	21.0	1 3/4"	2 53/64"	.250"	3.3
H-16-CW H-16-CCW	1/50	3.00	5.00	3490	.400	25.0	2"	3 1/64"	.250"	3.8

Write today for catalog sheet and quantity-price quotations.

THE GENERAL INDUSTRIES CO.

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Disagrees with writer

Gentlemen: I elect to disagree with Mr. S. J. Randall on the "Finish Line" page in the November issue, where he says that all insurance policies were alike except the color.

If that is true in Canada, it certainly is not in the United States.

Lyman S. Schultz, Expeditor
Bally Metal Products
Bally, Pa.

Goodwill in the making

Here's a switch for the Editor's Mail column, as it represents a letter from the editor, instead of to the editor.

Apropos of a descriptive letter by Mr. Balsamo of Dictaphone Corp., in the Finish Line editorial for November, the following letter to the service department of Dictaphone, New York, is quoted:

"I was in New York last week for one evening en route to an important editorial job in Pennsylvania. I checked my Dictet just a few minutes before five o'clock in the evening and found that it would not operate. I phoned your office, talked to Mr. Dick Rodmaker and, when his phone suggestions didn't work, he offered to stay until I could get there.

"Fortunately, a cab got me to your service department in time for Mr. Rodmaker to put the equipment in shape quickly, and it did a fine job for me the next day.

"I want you to know that service of this type is greatly appreciated by editors and businessmen who depend on the Dictet for the recording of important information."

Dana Chase

NST and AAR

Gentlemen: I had the pleasure of discussing the NST program with Ralph Bisbee recently at a Shippers Advisory Board meeting in Jacksonville, Florida, and of renewing our acquaintance.

The Safe Transit program is being brought to the attention of both carriers and shippers at every opportunity. Our Section is currently conducting seminars on various subjects throughout the country, and NST literature is being distributed at each Seminar. Seminars were conducted at Louisville, Kentucky and Cincinnati, Ohio recently, and considerable interest was shown at each meeting.

Our most recent bulletin concerning

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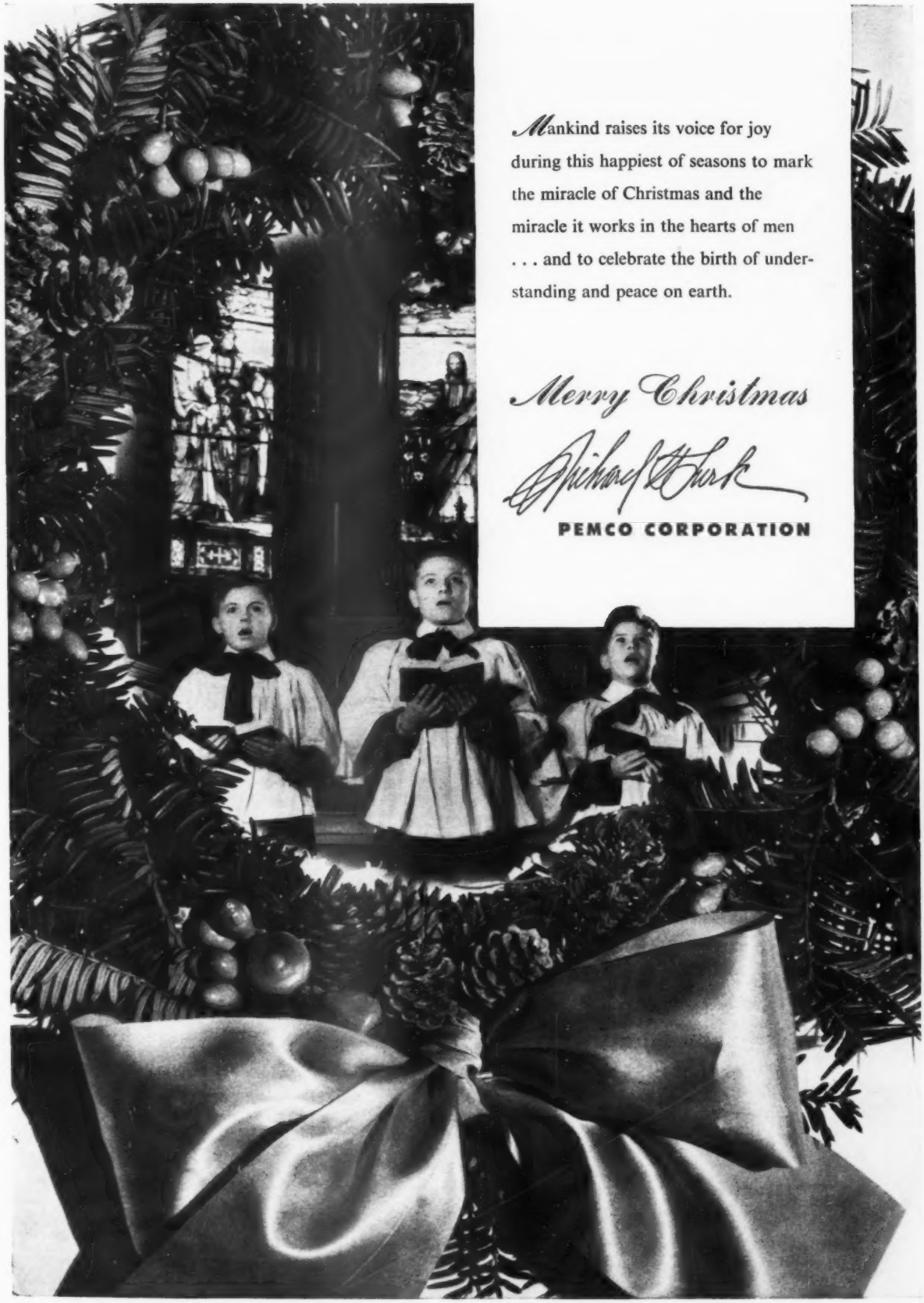

Mankind raises its voice for joy during this happiest of seasons to mark the miracle of Christmas and the miracle it works in the hearts of men . . . and to celebrate the birth of understanding and peace on earth.

Merry Christmas

Richard S. Burke

PEMCO CORPORATION

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FIRST AUTOMATED IRON PHOSPHATE PROCESS! *and it's "cold," too!*

NEWEST PRE-PAINT TREATMENT FOR STEEL

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Put your phosphate processing on a more productive basis with the first completely automated phosphating line in the metalworking industry. Write, wire or phone your local AMCHEM representative for further information on cost-saving, time-saving Granodine 663!

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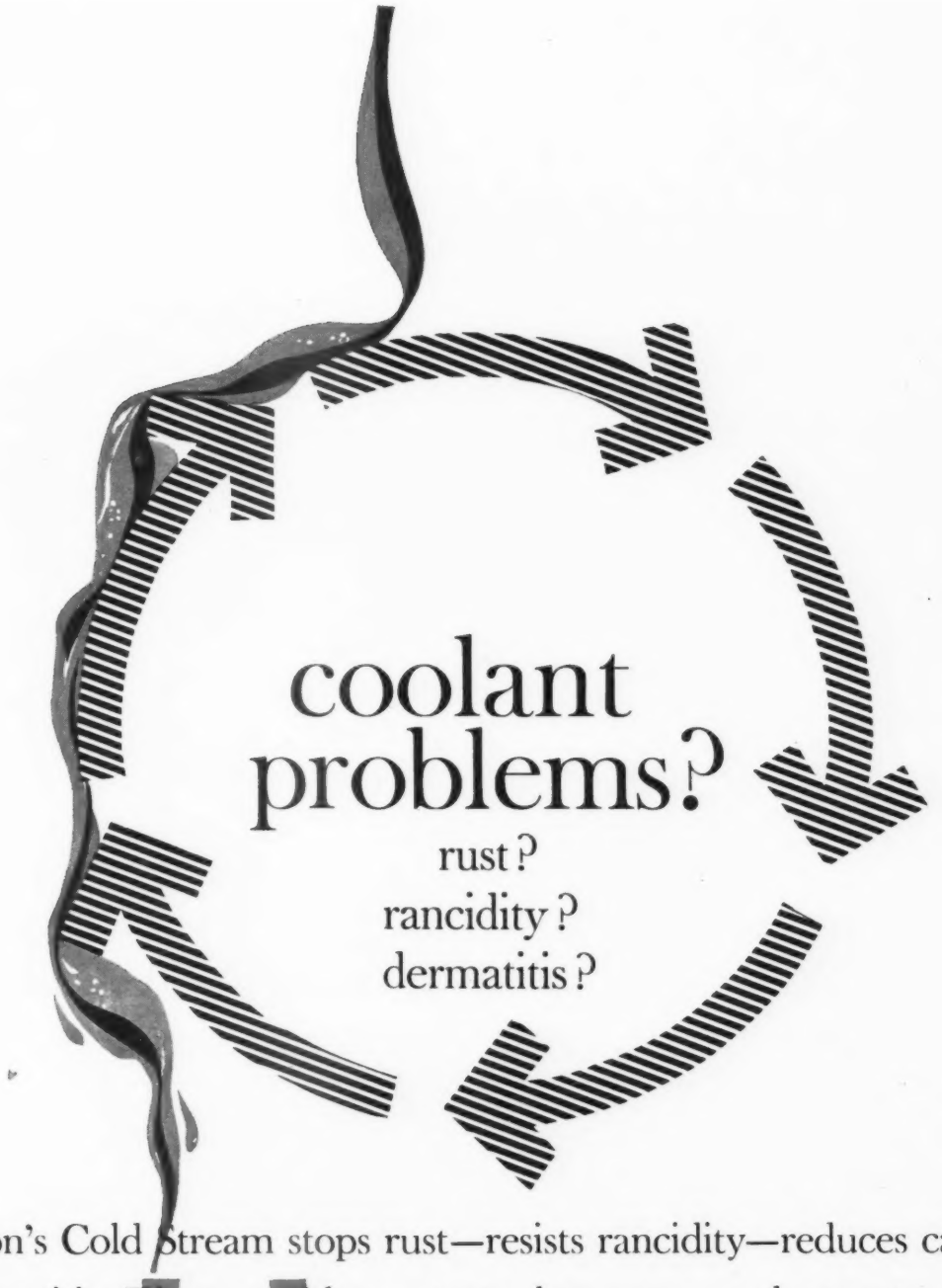

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rancidity?
dermatitis?

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cold stream

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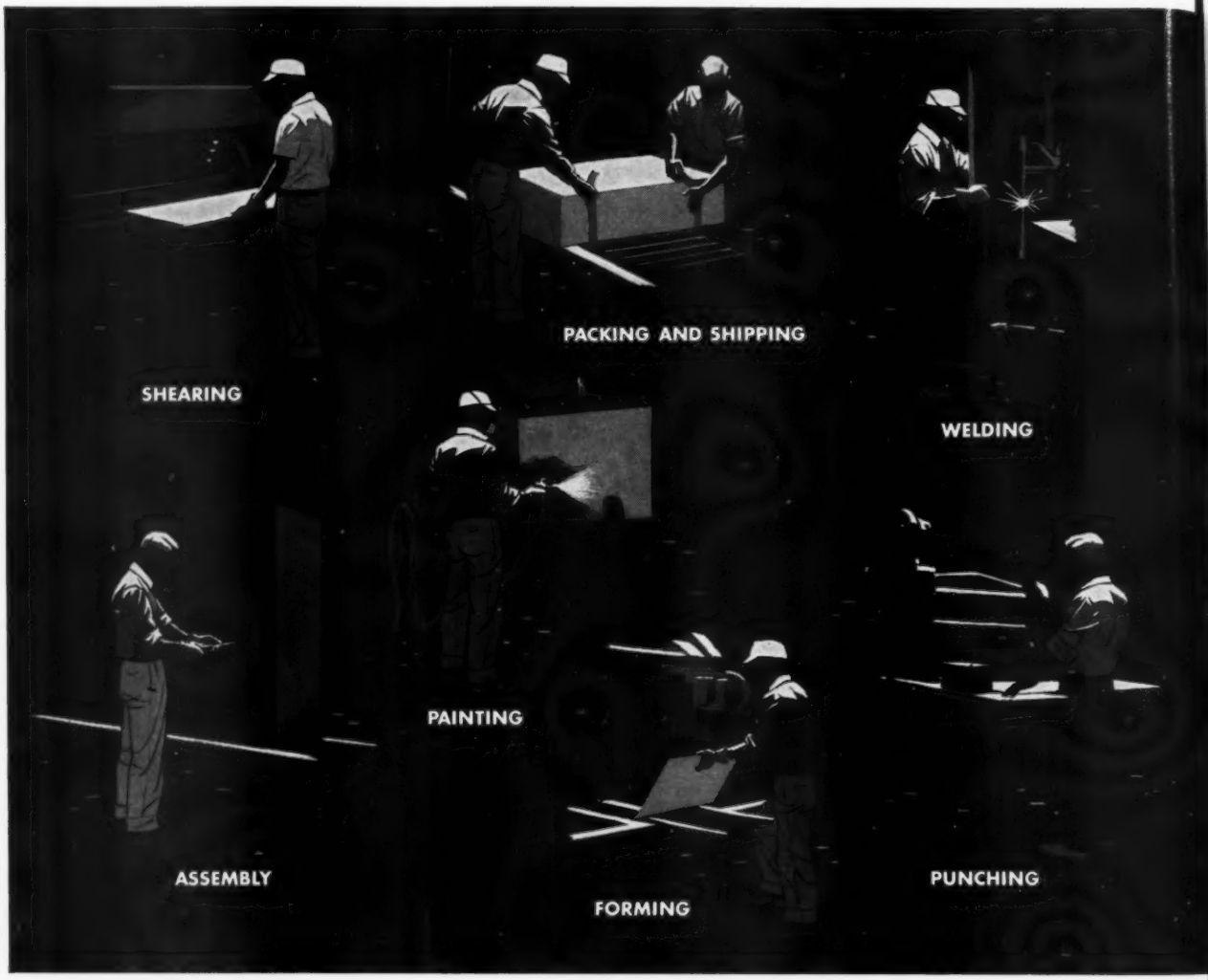


REPUBLIC GALVANNEALED SHEETS are used by the Bastian-Blessing Company, Chicago, Illinois, in producing a line of high-quality refrigerated soda fountain and food service equipment. Galvannealed Sheets are used for backs, liners, and other concealed parts. Bastian-Blessing finds Galvannealed Sheets resist corrosion even if painted surface should be scratched or marred. The versatility and ease of fabrication make Galvannealed Sheets ideal for a wide range of manufacturing applications. Write today.

CONSISTENT PAINT-HOLDING CAPACITY makes Republic Electro Paintlok® ideal for major home appliances, cabinets, commercial, and industrial applications. Produced by electro-galvanizing and a chemical treatment process for paint adherence. Electro Paintlok Sheets are shipped from the mill in prime condition for painting. Send coupon.

REPUBLIC...can do it for you

complete sheet steel fabrication facilities

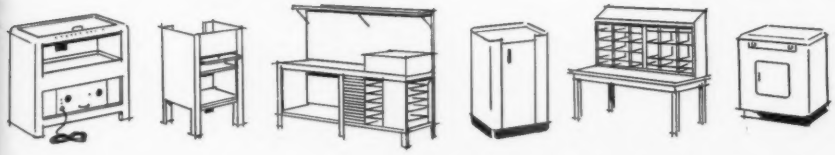
Contract manufacturing is a full time operation at Republic. Berger Division Engineers work with you in developing your product. Broad sheet steel fabrication facilities and experienced craftsmen solve your manufacturing, assembly, delivery problems.

Republic's Berger Division has complete facilities. Well rounded stock of tools and dies, and a complete machine shop. Modern assembly lines for shearing, punching, forming, finishing, and painting.

Standard and special arc, spot, and gas welders designed for production line assembly. Tumbling barrels and plating equipment. Grinders and sanders for final trim and finish.

Finest finishing facilities including Bonderizing and electro-static paint spray equipment. Finishing conveyors through spray booths, dip tanks, and baking ovens. Automatic materials handling equipment. Completely mechanized crating department with conveyor line carton-packaging facilities.

Berger Division complete sheet steel fabrication know-how and facilities may be the answer to your assembly-production problems. To learn more about Republic-Berger contract facilities, call or write today.



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REPUBLIC ENDURO® STAINLESS STEEL SHEETS are recommended for applications where there is a need for maximum resistance to corrosion, exceptional ease of cleaning, and where a sanitary surface is of utmost importance. After various fabricating operations, this semi-finished Bastian-Blessing unit is almost ready for test and shipment. A final step is light buffing (above) to bring out the satin-like surface of the Republic Stainless Steel. In the completed product, eye appeal, sanitation, and ease of cleaning are all derived from the use of Republic Stainless Steel. For more information, call your Republic representative, or write direct. Use coupon.

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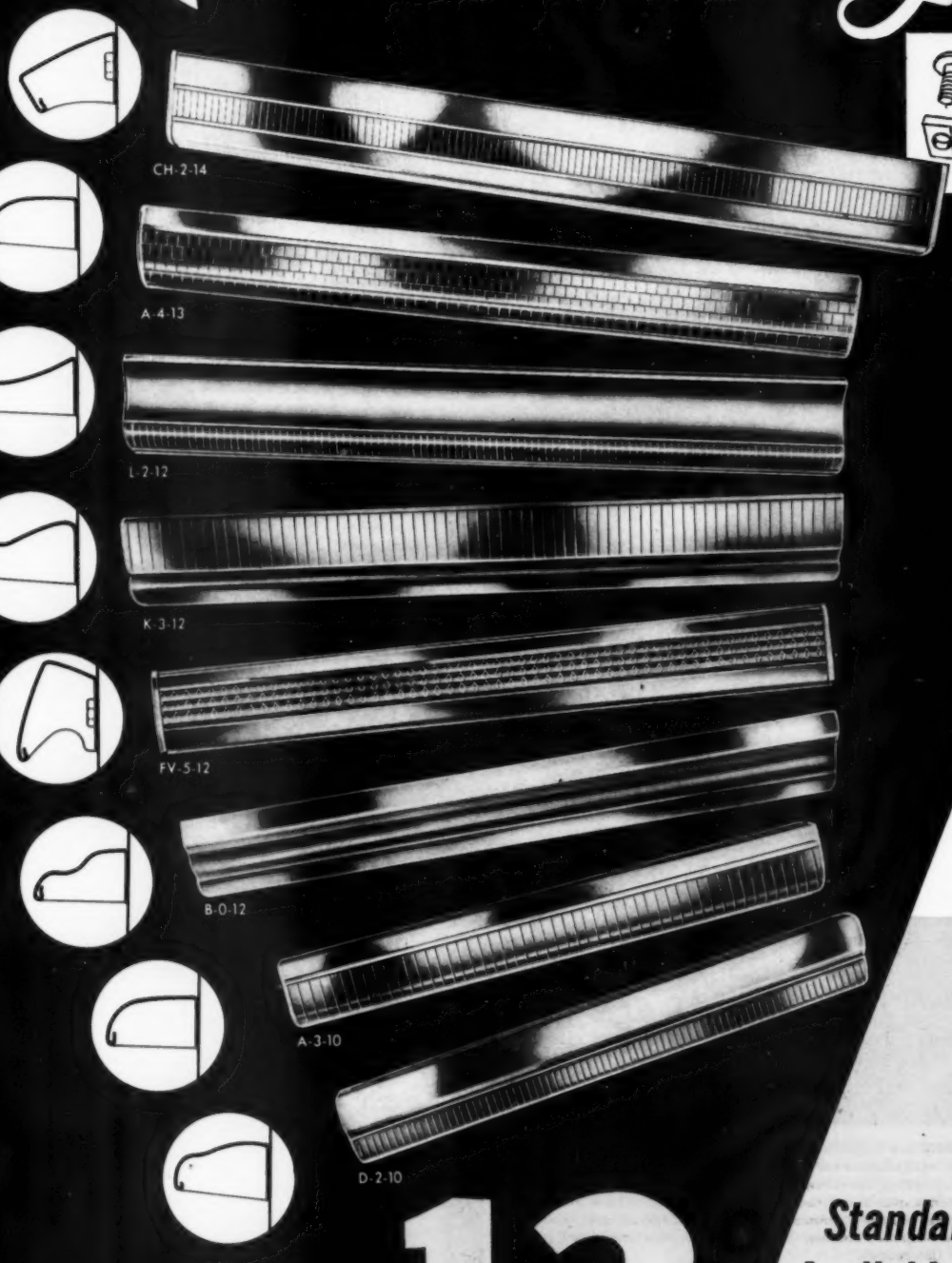
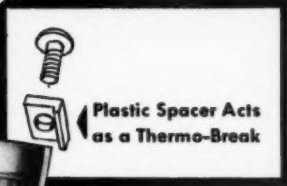
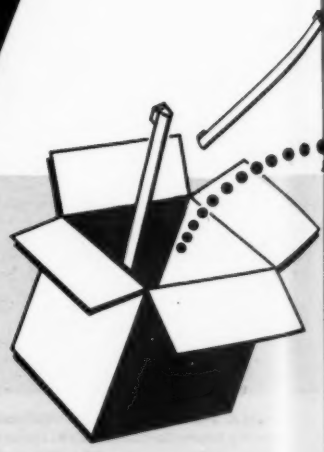
Announcing!







12 *Standard Models* Available to You

In the new Mills line you have a selection of distinctive designs available immediately at standard production prices.

12 STANDARD MODELS—6 STANDARD PATTERNS

another MILLS PRODUCTS *service...*

PERMA-GRIP® Handles

* Mills Products, Incorporated, manufacturer of the now universally accepted PERMA-VIEW® oven door window, used by the leading manufacturers of gas and electric ranges, announces another service for appliance manufacturers—PERMA-GRIP handles.

You can now purchase your appliance handles built to Mills' quality standards. Twelve standard models are offered and six standard patterns are available on any model handle. All handles have plastic spacers which serve as a thermo-break. If you wish, consult with our engineering department regarding special custom requirements.

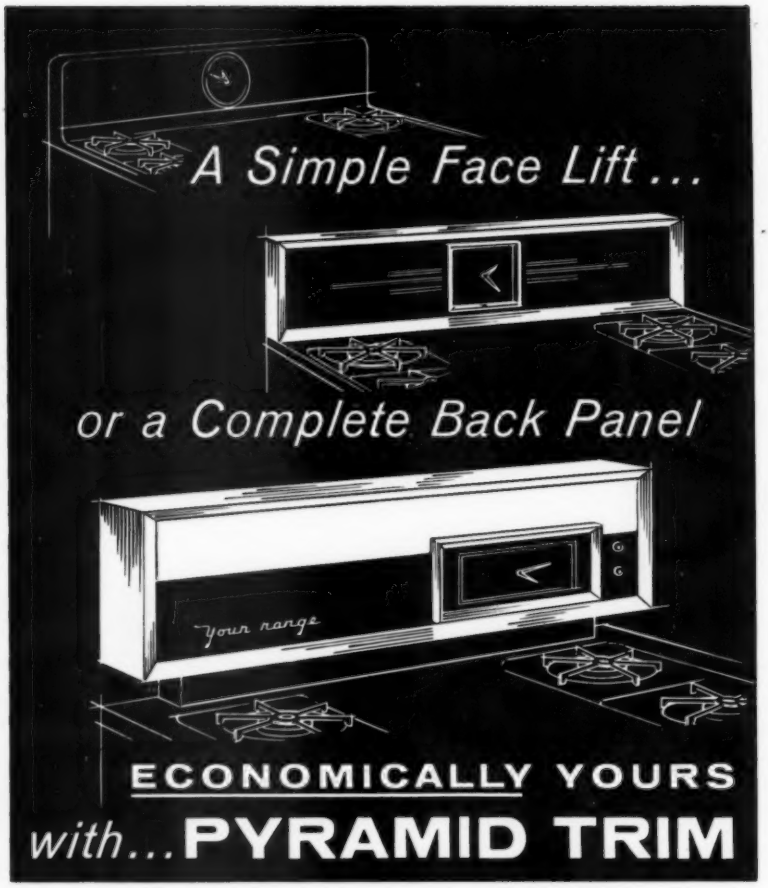
We have the skilled personnel, the specialized equipment, and we use the right materials to assure a reliable source for quality PERMA-GRIP handles. Let our specialized production lines serve as a part of your sub-assembly facilities. Phone or write us for complete details on PERMA-GRIP handles.

out of our carton—onto your door!

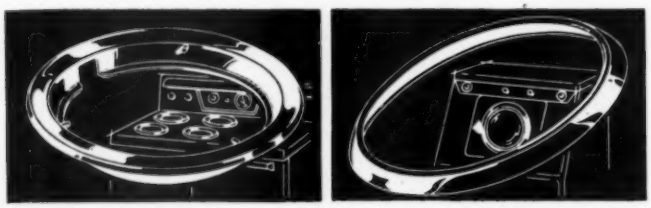
THE WINDOW YOU CAN SEE THROUGH ALWAYS

MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD • WALLED LAKE, MICHIGAN



A new look can be yours for little or no tooling cost with Pyramid Trim. Standard sections can be custom tailored to combine dollar savings with individual design . . . to simply rearrange your back guard, or to provide a complete new instrument panel. Details and samples on request.



Pyramid glistening stainless steel rings "dress up" today's best selling appliances. Roll-formed from endless spirals, Pyramid rings cut costs by eliminating waste.

Write Today for "Plan Book of Metal Mouldings"

Pyramid Mouldings Inc.

5365 WEST ARMSTRONG AVE., CHICAGO 46, ILL.
UPLAND, CALIFORNIA BRONXVILLE, NEW YORK

Editor's mail

→ *from Page 6*

the NST program was distributed on August 27, copy attached, and has received favorable comments. Our bimonthly poster, which was distributed in November, will highlight NST, and has been designed through the joint efforts of Bud Wilkinson and our staff.

We will send you copies of the poster as soon as they are released in case you would like to reproduce it in your Safe Transit Section of MPM. Our entire staff reads your fine magazine with interest and, if we can be of assistance at any time, please feel free to call on us.

C. A. Naffziger,
Director, Operations & Maintenance Dept.
Association of American Railroads
Chicago

The AAR has been most cooperative in working with MPM's editorial staff as required to further both the Safe Transit Program and better packaging and shipping practices for metal products.

The Editors

Manufacturer could benefit

Gentlemen: I enjoy your magazine, METAL PRODUCTS MANUFACTURING, very much, and from the standpoint of a salesman and representative of Pyramid Mouldings, Inc., I get a lot out of your article on the "Sunbeam Dual Deluxe vacuum cleaner."

The part that is most interesting to me is the "exploded parts view," as here one can, perhaps, find methods of cost reduction that can be discussed with our own engineering department and then eventually submitted to the maker. Also, the manufacturer himself, having exposed his detailed fabrication, will benefit by suggestions that might come in from the supplying trade with cost reduction items.

I hope that you will continue to feature new products in the same manner as it is most interesting and valuable information.

Claus M. Wiedemann,
Manufacturers Representative
Cincinnati, Ohio

Mr. Wiedemann's suggestion is being passed through our editorial department.

A correction

In the November issue of MPM, Page 100, there appeared a photograph and caption pertaining to the groundbreaking ceremony at the site of the proposed porcelain enamel research house of the Ferro Corp. In the caption, reference was made to Robert J. Ritchey as manager-advertising and sales promotion, U. S. Steel Corp. Actually, Mr. Ritchey is manager-advertising and sales promotion, U. S. Steel Homes Division, U. S. Steel Corp.

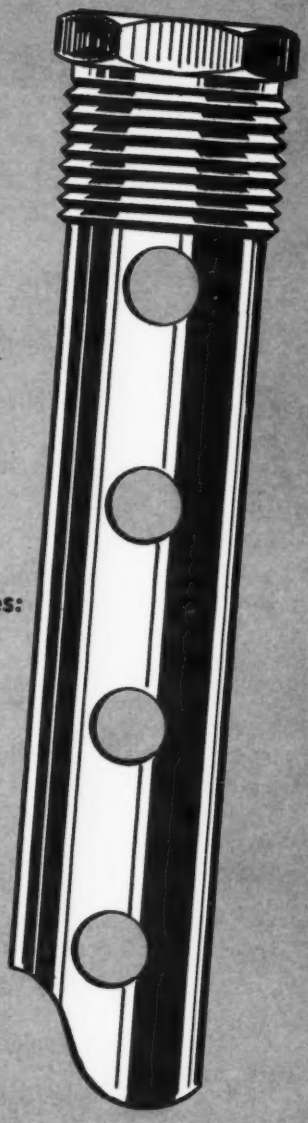
The Editors

NEW PRODUCT EXTENDS WATER HEATER LIFE

Patrol Armored Anodes Offer Greater Corrosion Protection For Glass-Lined Water Heaters!

These revolutionary magnesium anodes are protected with a perforated shell of aluminum.

Only a small fraction of the anodic surface is exposed to the corrosive action of the water. Although Armored Anodes give improved performance under all water conditions, extensive investigation proves that they last up to 5 times as long as unprotected anodes:



When magnesium anodes are used to control corrosion in glass lined water heaters, in light of tests conducted to date the anodes should be covered with perforated sheathing of aluminum or a plastic which does not deteriorate in hot water.

Reprinted From A.G.A. Project Bulletin DJ-5-WH

Why YOUR Glass Lined Water Heaters Need Armored Anodes:

- **IMPROVES YOUR PRODUCT**
  Armored Anodes give improved performance under all water conditions . . . give your heaters years of additional, rust-free performance; greater dollar-for-dollar value!
- **IMPROVES YOUR WARRANTY**
  Armored Anodes last twice as long . . . give your warranty greater security . . . permit increased warranty periods.
- **IMPROVES YOUR PROFITS**
  Eliminate causes for expensive "call backs" — such as water heater rumbling, gas formation and tank failure — promotes goodwill!

PIONEER DEVELOPERS OF ANODES, ACCESSORIES AND COMPONENTS FOR WATER HEATERS, GAS RANGES AND GAS FIRED APPLIANCES.

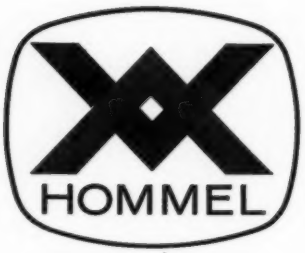
PATROL ARMORED ANODES

THE PATROL VALVE CO.

Armored Anode Division

2310 SUPERIOR AVENUE • CLEVELAND 14, OHIO

A-2464



A new decade dawns challenging American industry. The much heralded '60's bring an unprecedented demand for more products. Ready to help you successfully develop and produce these needed products, The O. HOMMEL COMPANY confidently accepts the challenge. Past experiences plus new research facilities and production techniques are our credentials. Symbolizing this preparedness is our new trademark: the ancient alchemist symbol for vitrum — heart of the ceramic industry. This modern treatment of an ancient symbol parallels O. HOMMEL'S molding of an ancient art to meet our customers' new demands of today and tomorrow. More than ever before, HOMMEL is Ceramics . . . your most reliable source for frits, colors and oxides. The O. HOMMEL COMPANY Pittsburgh 30, Pa. West Coast Warehouse, Laboratory and Office 4747 E. 49th Street . . . Los Angeles, California World's Most Complete Ceramic Supplier. . . HOMMEL

DEPT. MPM-1259

Inland "job-tailored"
Cold Rolled Sheets work better

product: VACUUM CLEANER TANK PART

problem:

produce a handsome vacuum cleaner tank of the upright type, designed in a silhouette for consumer eye appeal. The operation to be a single deep draw. Because of the depth of the draw and the severe shaping, a sizeable amount of breakage could result. The required draw also produced stretcher strains in the shaped tank which handicapped later finishing operations.

solution:

quality standards were met and the problem overcome by "job-tailored" Inland Cold Rolled, Drawing Quality, Aluminum Killed Steel. This steel, specifically recommended for the job, successfully took the deep draw and pattern formation required. Stretcher strains were eliminated and an excellent surface obtained for all subsequent finishing.

INLAND STEEL

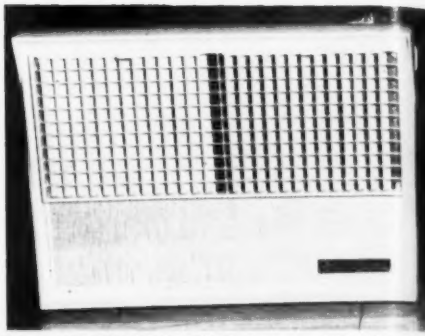
30 West Monroe Street, Chicago 3, Illinois

Sales Offices: Chicago • Davenport • Detroit • Houston • Indianapolis
Kansas City • Milwaukee • New York • St. Louis • St. Paul

INLAND

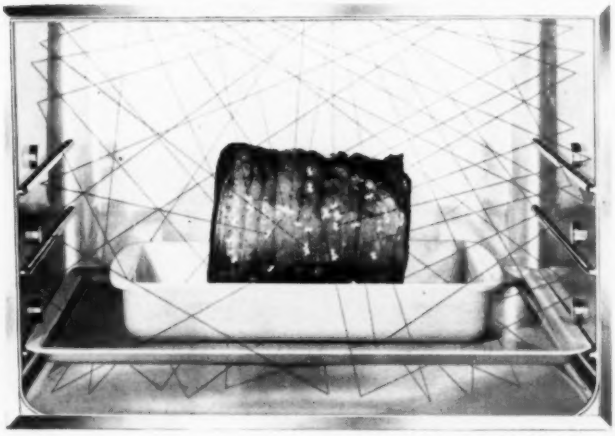
Cold Rolled Sheets

RAMP CONTROLS make this Preway gas model the easiest to install and most attractive built-in surface unit of the Wisconsin Rapids, Wisc. firm. The ramp control is a top-mounted control enclosure, inclined upward from front to back, out of the way of children.



GOLD-PATTERNED VINYL is used by Travel-Aire to add to the attractiveness of these two new dehumidifiers. The decorative panels, supplied by Arvin Industries Inc., Columbus, Indian, are

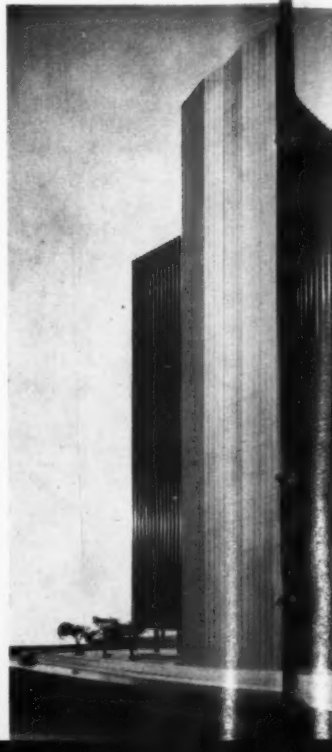
(Right) ELECTRONIC OVEN by Westinghouse Electric Corp. features "speed-o-light" cooking. The microwave or electric oven can cook an angel food cake in six and one-half minutes, and needs but five minutes per pound for turkey and six minutes per pound for roasts.



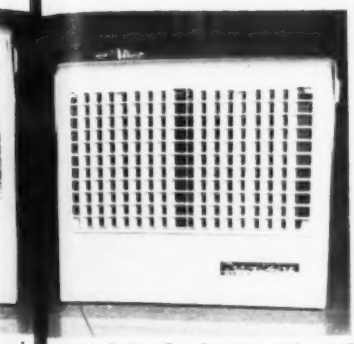
STAINLESS STEEL MULLIONS are in gleaming evidence, showing how this 22-story structure at #4 Gateway Center, Pittsburgh will look when

RHEEM HIGHBOY furnace's ease of installation is dramatized by taking the furnace through a standard exterior door frame. Available in five sizes, with input of 80,000 Btu to 160,000 Btu, the furnaces have combustion chambers and heat exchangers coated with "Rheemglas" to prevent corrosion and give long life.

(Left) MODULAR FURNITURE for a junior executive and his secretary is portrayed here. Manufactured by Remington Rand, the all steel room setting includes a U-shaped grouping of a 60" x 30" desk, additional work surface along the wall, and a return along the back wall with ample storage space underneath. The secretarial office includes an arrangement with a return for an electric typewriter, and a storage cabinet.

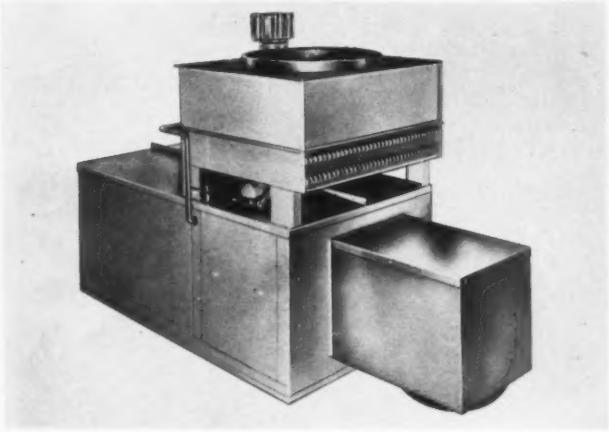


. . . . foto-news



inserted in the front section of the unit. They are made of 12 mil vinyl which is laminated to .015 steel. Cabinets of the dehumidifiers also are fabricated from a vinyl coated steel.

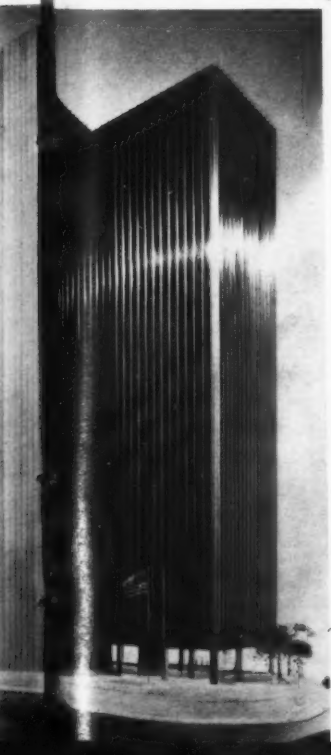
ALL-TITANIUM frying pan is being used here by Jean Gregoire, executive chef of New York's Hotel Roosevelt. The experimental pan was fabricated by Mallory-Sharon Metals Corp., Niles, Ohio, as part of a nation-wide program to promote uses for titanium.



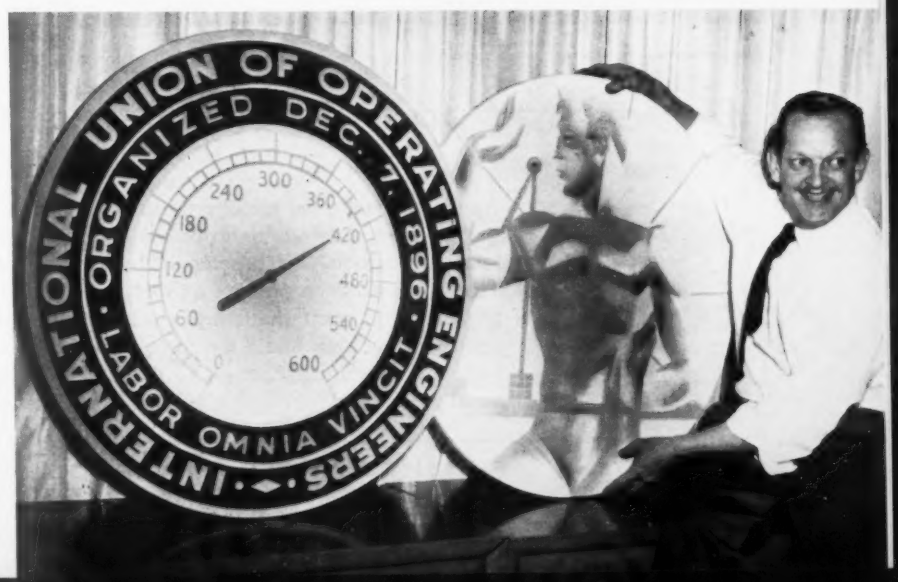
completed next year. The mullions and panels of the 16-million dollar building are being fabricated by the Limbach Co., Pittsburgh.

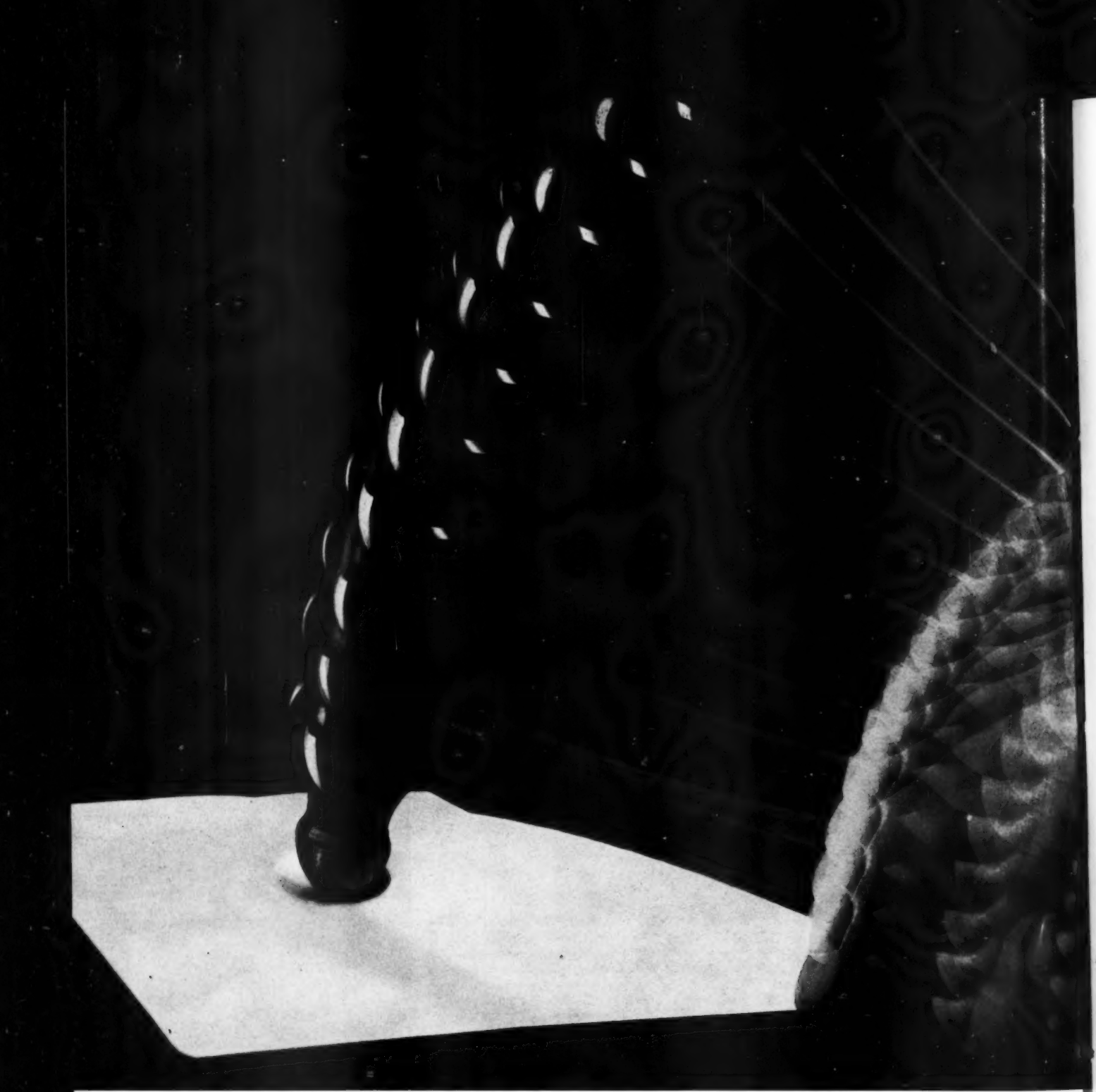
ROOF MOUNTED packaged air-cooled air conditioner and gas-fired heater combination has been introduced by Typhoon Air Conditioning Co., Div. Hupp Corp. It is available in two sizes with nominal air conditioning capacities of five to eight tons. The unit is particularly suitable for heating and cooling shopping center stores, super markets and similar one-story structures.

CENTRAL AIR CONDITIONING system is displayed in this specially built housing. This "Landmark 34" 5-ton unit manufactured by Lennox Industries, Inc., Marshalltown, Ia., is for basement installation in the home.



PORCELAIN ENAMELED steel emblems, designed and executed by Edward Winter, are an over-the-door decoration for the entrance to the International Union of Operating Engineers Building, Local #18, Akron, Ohio. Enameled steel was selected because of its color and permanence. Measuring 72 inches in width, the emblem is flanged on the edges for protection from the weather, and colors are red, ivory, chartreuse, dark blue, and brown.





Pound for pound – a finish that's hard to beat

Appliances and other metal products for the home are no strangers to bumps and knocks from tools, toys, brooms and boys. That's why Glidden product finishes are formulated to resist shattering, cracking and chipping, even under the force of a hammer blow hard enough to dent a metal panel.

Whatever your product, from hairpins to locomotives, there is a Glidden finish designed to fit your specific needs—protection against heat, cold, humidity, corrosion, impact, abrasion, staining.

Your Glidden salesman can give you complete details on the Glidden finish best suited to your requirements.

QUALITY Glidden PRODUCTS

FINISHES FOR EVERY PRODUCT

The Glidden Company
INDUSTRIAL PAINT DIVISION
900 Union Commerce Building • Cleveland 14, Ohio
In Canada: The Glidden Company, Ltd., Toronto, Ontario

No matter what your product, process or problem, Glidden Finishes plus Glidden Technical Service can provide the answer.

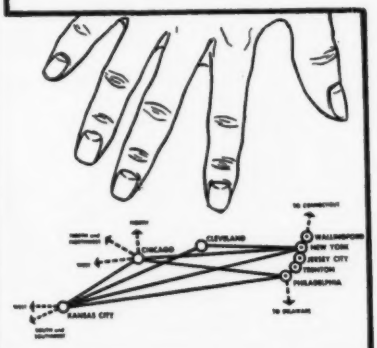
METAL PRODUCTS STATISTICS

		1959 (Units)	1958 (Units)	% Change
Gas Furnaces-Warm Air	September	122,600	116,000	+ 5.7
	Jan.-Sept.	770,500	595,600	+29.4
Gas Boilers	September	17,600	20,300	-13.3
	Jan.-Sept.	99,300	87,600	+13.4
Gas Conversion Burners	September	27,800	28,700	- 3.1
	Jan.-Sept.	109,400	105,100	+ 4.1
Oil Fired Central Heating Equipment	September	*	68,046	*
	Jan.-Sept.	*	393,181	*
Gas Ranges, Free Standing	September	172,100	157,700	+ 9.1
	Jan.-Sept.	1,247,200	1,174,400	+ 6.2
Gas Ranges, Built-In	September	33,600	24,400	+37.7
	Jan.-Sept.	253,400	157,500	+60.9
Gas Water Heaters	September	240,000	230,000	+ 4.3
	Jan.-Sept.	2,281,400	2,003,100	+13.9
Gas Vented Recessed Wall Heaters	September	43,900	41,200	+ 6.6
	Jan.-Sept.	317,200	258,500	+22.7
Gas Floor Furnaces	September	14,000	16,300	-14.1
	Jan.-Sept.	68,400	66,100	+ 3.5
Gas Direct Heating Equip.	September	210,600	218,000	- 3.4
	Jan.-Sept.	989,000	921,000	+ 7.4
Gas Unit Heaters & Duct Furnaces	September	16,500	14,500	+13.8
	Jan.-Sept.	106,700	89,600	+19.1
Gas Incinerators	September	4,500	5,500	-18.2
	Jan.-Sept.	32,900	36,200	- 9.1
Electric Household Refrigerators	September	355,700	295,200	+20.5
	Jan.-Sept.	2,906,900	2,306,800	+26.0
Electric Farm & Home Freezers	September	101,700	121,200	-16.1
	Jan.-Sept.	987,700	835,900	+18.2
Electric Ranges, Free-Standing	September	83,300	68,200	+22.1
	Jan.-Sept.	707,300	573,900	+23.2
Electric Ranges, Built-In	September	73,900	53,600	+37.9
	Jan.-Sept.	544,600	371,800	+46.5
Electric Storage Water Heaters	September	71,000	74,300	+ 4.4
	Jan.-Sept.	626,000	611,800	+ 2.3
Electric Dishwashers	September	58,300	42,800	+36.2
	Jan.-Sept.	396,000	288,400	+37.3
Electric Food Waste Disposers	September	81,500	56,200	+45.0
	Jan.-Sept.	553,800	435,500	+27.2
Combination Washer-Dryers	September	25,461	19,806	+29.0
	Jan.-Sept.	140,554	106,145	+32.0
Washers, Automatic & Semi	September	301,201	311,848	- 3.0
	Jan.-Sept.	2,193,072	1,950,552	+12.0
Washers, Wringer & All Other	September	92,911	111,225	-16.0
	Jan.-Sept.	689,137	654,186	+ 5.0
Electric Dryers	September	115,151	110,008	+ 5.0
	Jan.-Sept.	609,043	508,691	+20.0
Gas Dryers	September	59,409	48,725	+22.0
	Jan.-Sept.	301,383	221,933	+36.0
Vacuum Cleaners	September	305,096	299,618	+ 1.8
	Jan.-Sept.	2,505,983	2,345,346	+ 6.8
Metal Furniture	September	*	*	- 3.0
	Jan.-Sept.	*	*	+ 5.0
†Television	September	808,377	621,734	+30.0
	Jan.-Sept.	4,488,857	3,572,189	+25.7
†Radio (1)	September	1,981,208	1,492,668	+32.7
	Jan.-Sept.	10,927,252	7,686,197	+42.2
Steel Barrels & Drums	August	2,481,909	2,648,706	- 6.3
	Jan.-Aug.	23,782,497	20,667,265	+15.1
Steel Pails	August	6,733,545	6,418,968	+ 4.9
	Jan.-Aug.	56,256,757	48,226,217	+16.6
Typewriters	September	108,539	125,833	-13.7
	Jan.-Sept.	902,218	*	*

† Output
(1) Including auto receivers
* Not reported

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

ALWAYS AT YOUR FINGER TIPS!



You . . . ***The Traffic Man*** . . . want your information quick . . . complete . . . and correct. You ask for a system that will give you the service you need when you need it . . . right now!

Cooper-Jarrett . . . ***The Traffic Man's Line***, with the most modern teletype-IBM system brings you that service right now!

All the information you need concerning shipments, schedules, availability of equipment or anything else you want to know . . . quick, complete, correct!

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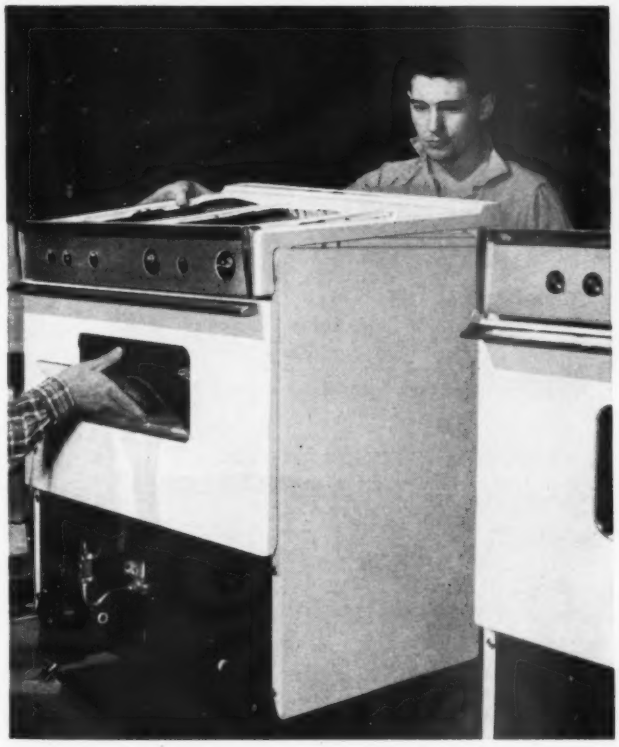
WALLINGFORD, CONN.
NEW YORK, N. Y.

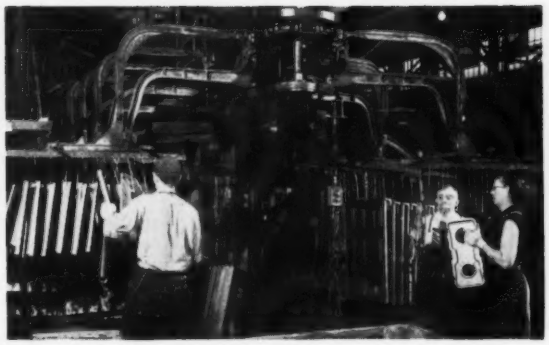
USS Vitrenamel takes severe shaping,

fires without flaws

The George D. Roper Corporation has a proud slogan—"America's Finest Gas Appliances." When you walk through the Roper plant at Kankakee, Illinois, you see why. Their volume is high but their standards are higher. Every part they make is painstakingly inspected to eliminate flaws.

Roper uses quality USS Vitrenamel enameling sheets for stove parts. The metal is highly ductile —takes severe shaping without cracks. It takes a smooth porcelain coat that fires with complete freedom from surface defects. And Vitrenamel parts retain their true shape when fired because the low carbon and manganese content gives the metal resistance to warpage and sagging at high temperatures Specify USS Vitrenamel, available in sheets or coils. *USS and Vitrenamel are registered trademarks*





United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

USS

IN FASTENERS SOUTHERN IS

service

Southern Screw has built **service** into its policies and products for the past 13 years. Its **service** has helped industries to solve serious production problems by reducing down-time, cutting reject losses, improving product quality and by reducing inventory and handling problems.

Put Southern's famous one-source **service** to work for you in one or more of these problem areas. When you do, you'll find that **service** is more than a word at Southern. It is an integral part of the finest USA-made fasteners money can buy. Send your order or inquiry to Southern Screw Company, P.O. Box 1360, Statesville, North Carolina.

Machine Screws & Nuts • Tapping Screws
Wood Screws • Stove Bolts • Carriage Bolts
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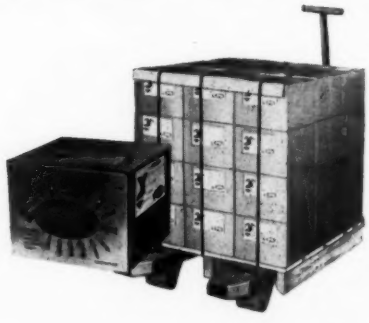
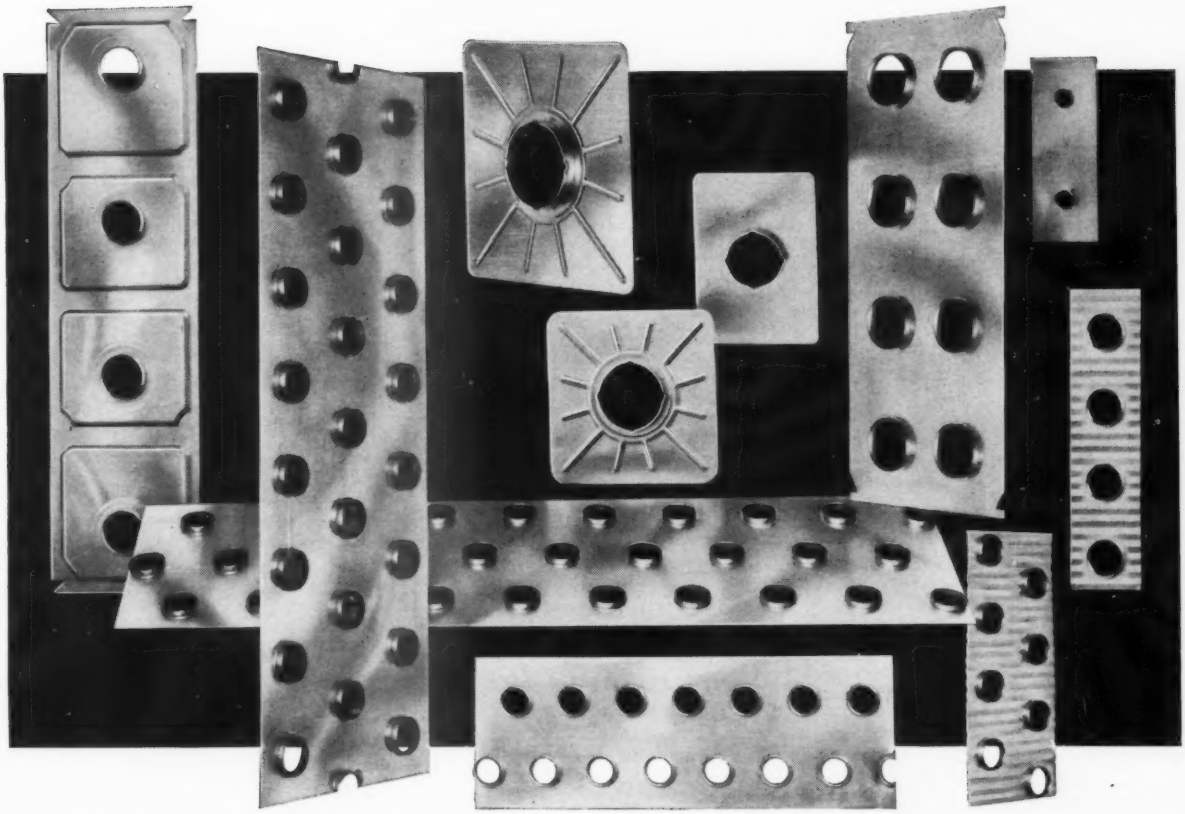
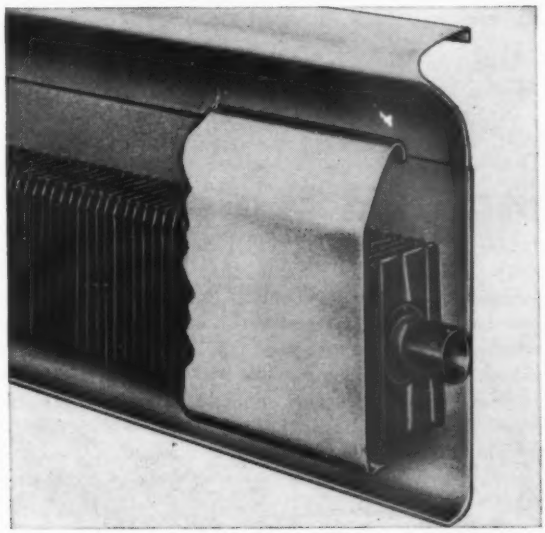
Warehouses: New York • Chicago • Dallas • Los Angeles





YOU GET MAXIMUM DESIGN LATITUDE WITH

FAIRMONT ALUMINUM



National-U.S. Radiator Corporation "Art Comfortline Baseboard" contains an advanced line heating element for a balanced combination of radiant and convected heat. Wrought aluminum fins 3003 alloy, .012" thick, are permanently bonded to copper tubes. Fairmont Aluminum sheet stock is selected for uniformity and excellence of performance.

To meet widely differing specifications in the manufacture of heat-transfer surfaces such factors as size, shape, thickness, perforation and spacing of fins are given proper evaluation by design engineers. Of equal importance is the aluminum fin's ability to withstand rapid mechanical forming in production and assembly without developing cracks or buckling, its ability in service to withstand temperature, moisture and mechanical attacks.

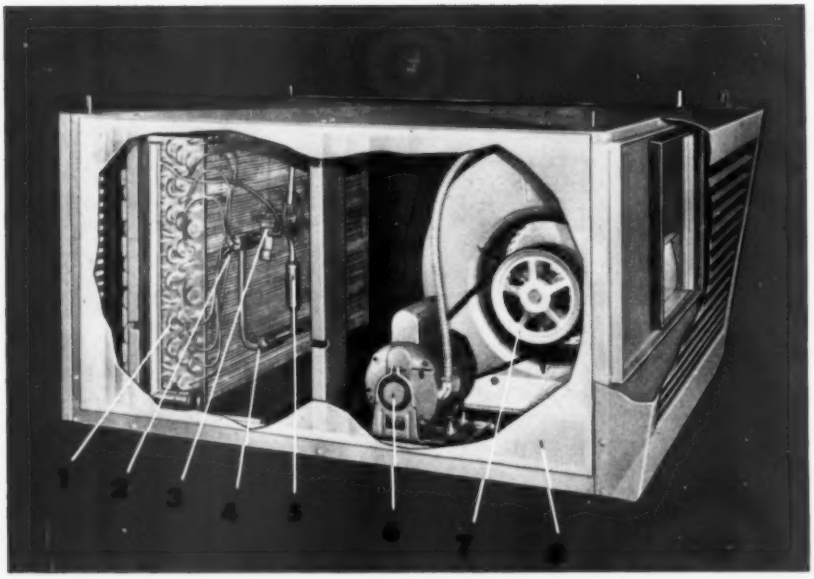
Along with rigid quality control, Fairmont offers "individualized" attention to manufacturers' requirements for coiled and flat sheet in 1100, 3003, 5005, 5050 and 5052 alloys. Let us show you why Fairmont aluminum is being specified by the foremost heat transfer product manufacturers. Write or call today.

Sales offices in principal cities

FAIRMONT ALUMINUM COMPANY

SUBSIDIARY OF CERRO DE PASCO CORPORATION

Dept. P-12 • FAIRMONT, WEST VIRGINIA



The indoor unit designed for use with or without ductwork (Type 317) includes a multi-blade, centrifugal-type blower that has prelubricated bearings, a single-phase, ball bearing, resilient-mounted blower motor. Optional equipment includes hanger channels, a return air grille, a discharge plenum grille, and supplementary resistance heat packages.

features

1 INDOOR COIL — copper tube and aluminum fin, designed for maximum performance alternately as heating and cooling coil.

2 DISTRIBUTOR — especially designed for proper flow of refrigerant on heating and cooling cycle.

3 HIGH PRESSURE THERMOSTATIC EXPANSION VALVE — especially designed for heat pump application to withstand higher pressures on the diaphragm.

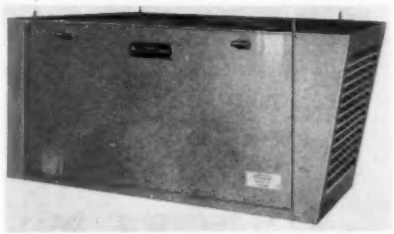
4 CHECK VALVE—to cause directional flow of refrigerant for either heating or cooling.

5 FILTER-STRAINER — provides filtering action in circuit to expansion valve.

6 MOTOR — continuous duty, single speed, resilient mounted, equipped with integral overload protection and variable speed sheave with V-belt drive.

7 BLOWER — multi-blade, centrifugal type to handle large volumes of air with minimum noise, prelubricated bearings, statically and dynamically balanced to eliminate vibration.

8 CABINET — heavy gauge steel, phosphatized, Mountain Spring Green finish.



ONE UNIT HEATS AND COOLS

hundred-year old company offers two basic air-to-air systems in . . .

AN MPM DESIGN FEATURE

The heat pump . . . glamour product in heating and cooling

THE NEW "GLAMOUR" WORD in heating and cooling in many parts of the nation is "Heat Pump."

To the uninitiated, the heat pump is an amazing unit which is operated by electricity and uses air for "fuel." One of the manufacturers of heat pumps for homes and commercial use is Mueller Climatrol Division of Worthington Corporation, Milwaukee, Wisconsin. Many homes and commercial establishments have been heated and cooled by Mueller heat pumps since 1957. Today, they're at work heating and cooling homes in a large subdivision in Fresno, Calif. . . . a drug store in Oregon City, Ore. . . . a large shopping center in Salem, Ore., etc. Many Mueller heat pumps are also at work in the Tennessee Valley, in Texas, and in Florida.

Extensive laboratory and field tests to prove rugged design characteristics and the ability to perform satisfactorily preceded production. Even temperatures the year 'round, by using both heating and cooling cycles of the heat pump, controlled by a single wall-mounted thermostat, had to be proved in use.

Two types manufactured

Mueller Climatrol manufactures two basic air-to-air heat pumps; remote and self-contained.

Twin refrigeration systems are a feature in the four-hp, self-contained heat pump, Type 315. The twin system provides two-stage air conditioning which results in improved humidity control and more efficient operation. The unit is designed to remove 11½ pints of water per hour, during humid summer conditions.

The remote heat pump is factory-packaged in two sections; one part is installed inside the home or office and the other outside. By placing the compressor assembly outside, normal operating sounds are not noticeable inside the home. Since only one-half of the system is inside, valuable space in the home is saved.

The outdoor compressor assembly unit (Type 318) is fully weather-protected against the elements for installation in any climate. Type 318 heat pumps are available in three and five-hp models.

Type 318-3 (three-hp) cabinet dimensions are 34⅛ inches in width, 30½ inches in height, and have a depth of 29¾ inches. The reciprocating suction gas-cooled compressor has two cylin-

features

1 FAN MOTORS — permanent split-capacitor type, prelubricated and waterproof.

2 CABINET — phosphatized and painted inside and out with a proporesin-phenol finish to provide exceptional adhesion and resistance to abrasion or chipping.

3 DUAL THERMAL BULBS — control bulb and auxiliary bulb to produce accurate control of thermal expansion valve.

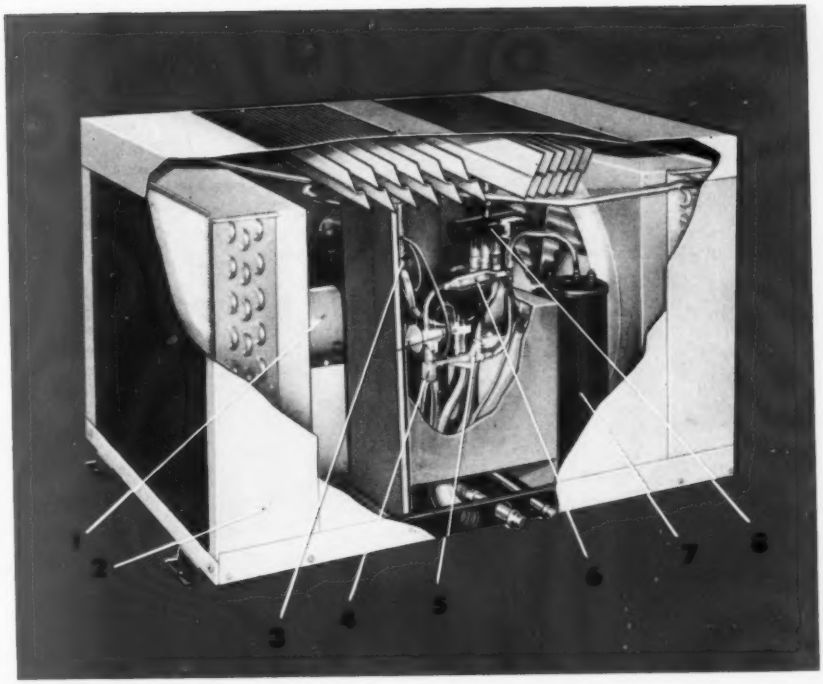
4 HIGH PRESSURE THERMOSTATIC EXPANSION VALVE — especially designed for pump application to withstand higher pressures on the diaphragm.

5 CHECK VALVE — to cause directional flow of refrigerant for either heating or cooling.

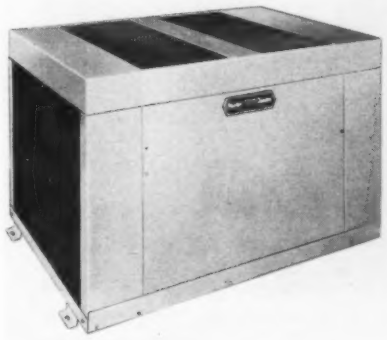
6 FILTER-STRAINER — provides filtering action in circuit to expansion valve.

7 DOUBLE-QUILL RECEIVER — utilized to insure flow of liquid refrigerant on heating cycle.

8 REVERSING VALVE — directs flow of refrigerant to proper coil(s) upon demand for cooling and heating.



The outdoor unit (Type 318) is protected for installation in any climate. The cabinet is designed so that water getting into the unit will drain out, and has a phosphatized, weather-resistant primer, and an electrostatically painted and baked-on green finish. The five-hp unit utilizes two separate condensers, one on either side of the compressor, while the three-hp model has one condensor.



ders. This is a compressor designed specifically for heat pump applications. The blower develops 2,700 cfm at 825 rpm. Cooling capacity is rated at 34,000 Btu hr. at 95° F. dry bulb and 75° F. wet bulb outside air with 80° F. dry bulb and 67° F. wet bulb inside air. Heating capacity is 37,500 Btu hr. at 45° F. dry bulb and 42.9° F. wet bulb outside air with 70° F. dry bulb inside air.

The five-hp model Type 318-5 has cabinet dimensions of 34⅛ inches in width, 29¾ inches in height, and 48¼ inches in depth. The suction gas-cooled reciprocating compressor has four cylinders and, again, this compressor is specifically designed for heat pump applications. The two condenser fans total 4,650 cfm at 1,075 rpm. Cooling capacity is rated at 56,000 Btu hr. at 95° F. dry bulb and 75° F. wet bulb outside air with 80° F. dry bulb and 67° F. wet bulb inside air. Heating capacity: 60,500 at 45° F. dry bulb and 42.9° F. wet bulb outside air with 70° F. dry bulb inside air.

The indoor unit (Type 317) includes the coil which heats and cools, and the air handling system which can operate with or without a duct. The unit can be suspended almost anywhere in the home, if it is desirable to conserve floor space.

The Type 317-300 (three hp) indoor cabinet measures 41 inches in width, 22¾ inches in height, and has a depth of 28¼ inches. The blower develops 1,200 cfm at 775 rpm. The evaporator coil has a surface area of 3.2 square feet and three rows.

Type 317-500 (five hp) cabinet has a width of 41⅝ inches, 23-1/16 inches in height, and 38 inches in depth. The blower develops 2,000 cfm at 745 rpm.

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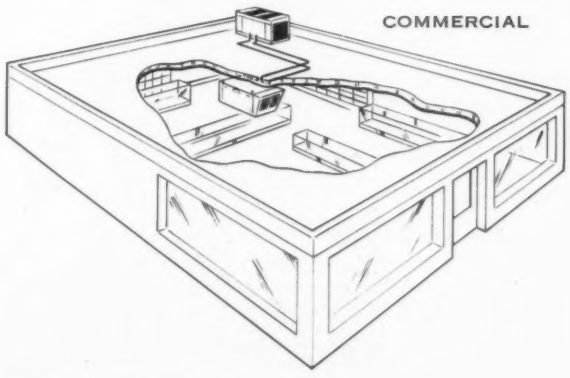
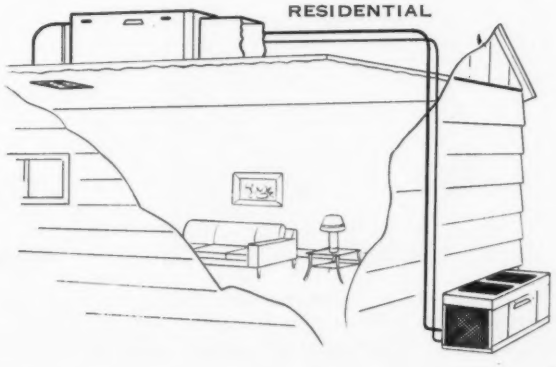
TYPE 317 INDOOR AIR HANDLING UNIT CONNECTED TO TYPE 318 HEAT PUMP (OUTDOOR UNIT)

COMMERCIAL



RESIDENTIAL



Slammin' Sam Snead fails to flake Inland TI-CO®

As one of golf's great players, Slammin' Sam earned his name and fame with a driving power that has seldom been equalled. His swing is deceptively easy —yet it drives the ball with astounding force and speed. At Boca Raton, Sam drove ball after ball into an Inland TI-CO galvanized sheet. Each impact was terrific. One would expect such punishment to be devastating, yet, though the TI-CO sheet was battered and dented—*there was no flaking of the zinc coating whatsoever!*

All year 'round in product fabrication and assembly; in a limitless variety of commercial and residential applications; Inland TI-CO regularly takes equally tough treatment—deep-drawing, spin-drawing, Pittsburgh lock-seaming, crimping, punching, hammering—*without cracking, peeling or flaking!*

Sam couldn't believe it either 'til he examined the TI-CO sheet for himself. *Not a trace of flaking!*

Consult your Inland Representative regarding *your* galvanized sheet or coil requirements. And send for your free TI-CO booklet containing technical data and complete information. TI-CO is produced with dry, oiled or chemically treated surfaces in sheet and coil form in a wide variety of gages and widths.

INLAND

INLAND STEEL COMPANY

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Ultrasonics in the appliance manufacturing industry

PHOTO COURTESY MURDOCH LABORATORIES DIV., BLACKSTONE CORP.

Steel components being ultrasonically cleaned.

THE EMERGENCE OF ULTRASONICS as an important new tool in the appliance industry is already numbering case histories and product developments of interest. In-plant operations, experiments and developments in conveyor designs for cleaning with high frequency vibratory energy are mounting.

Blackstone Corporation, manufacturers of home laundry appliances, profits from a two-part advantage: by making and using Blackstone ultrasonic cleaning units. In the laundry production division, the process is used for degreasing prior to finishing and plating. It accelerates the action of the pickling bath and allows an even spreading of plating materials. Ultrasonics cleans parts that go into final product, instruments used for quality control, and for everyday maintenance jobs of repairing and rebuilding machinery within the home laundry plant. It defers capital expenditures by permitting old production parts to be re-used.

PHOTO COURTESY BRANSON ULTRASONICS

An ultrasonic generator designed for large-scale automatic cleaning operations. Because it can energize up to six square feet of transducer area, it is ideal for conveyorization of metal fabrications through long tanks. Separate instrument panel allows remote operation of generator from central control area.

A major single production cleaning application for ultrasonics is the removal of surface soil and chips from clutch plates. Here, the clutch assembly is formed by bonding a cork composition gasket to a steel plate. This assembly is immersed in oil, subjected to elevated temperatures and high stresses for the life of the machine. If the bond between the gasket and plate is broken, the machine does not function properly.

The strength of the bond between these parts is determined by the cleanliness of the steel clutch plate. Ultrasonics is used to clean this part because the delicate scrubbing action created by the cavitation of the solvent penetrates into the surface pores of the metal and removes all dirt particles. If the surface pores are not cleaned, the remaining thin film of dirt acts as a barrier preventing good adhesion between the parts.

Among the applications of ultrasonic cleaning used by Blackstone are:

A. The cleaning of black water emulsion paint from spray gun nozzles.

B. The cleaning of bearings on production equipment.

C. Removing oxidation deposits from brazing torch tips.

D. Cleaning metallurgical specimens.

Stainless steel equipment

Blackstone cleaning units incorporate 18-8 stainless steel for the treatment chamber, work top, filter piping and porous filter. This form of chromium-nickel stainless steel is used for corrosion resistance and easy maintenance. "A" nickel laminations make up the transducer stack. Nickel allows for an unlimited transducer size and capacity due to its fatigue strength and a Curie point of 353° C. It is appropriate for hard use when extremely high acoustic power is to be supplied for long periods. Its heat conductivity permits efficient cooling. The largest standard unit has a cleaning chamber 10 inches wide, 12 inches deep, and 20 inches long. Twelve gallons of cleaning solvent is continuously circulated and filtered during the cleaning cycle.

New production-size units indicate the coming of a complete range of power, performance and capacity to meet the needs of home appliance production lines. Some units, already out of experimental stage, activate up to six square feet of transducer area, or 300 gallons of cleaning solution. They feature motor tuning, twin oscillator construction, and remote control for automatic and semi-automatic production lines.

One model includes a remote control panel connected through a multi-conductor cable. The panel can be incorporated with other instruments at a central control area. This allows one operator to adjust an entire cleaning procedure without leaving his post.

The powering of conveyorized systems and other large, all-ultrasonic cleaning installations are available. They replace manual cleaning at the immersion stage of large-scale washing, degreasing, or plating installations. Two cleaning tanks can be activated independently. This helps coordinate cleaning, rinsing, and degreasing operations.

"WEIRKOTE® WON'T PEEL OR FLAKE—AND CAN END THE NEED FOR FURTHER CORROSION PROTECTION AFTER FABRICATION."

Q. A zinc-coated steel sheet that won't peel or flake, even under the severest fabricating stresses?

A. Precisely. Weirkote's made by a continuous process. The zinc is so integrated with the steel that even the toughest "torture" tests of fabrication leave that bonded coating intact. You can work Weirkote to the very limits of the steel itself!

Q. Our products are pretty intricate—take lots of flexing, crimping and so on. What about those hard-to-reach places?

A. Weirkote's zinc coating is so uniform—protects even the most complicated parts.

Q. So with Weirkote you bypass the need for further corrosion protection?

A. You get the picture! Think of the time, labor, space—the costly capital outlay—you save. Better steel products at far lower costs—that's Weirkote for you!

Send for free booklet that details the time-and-cost-saving advantages of skin-tight zinc-coated Weirkote. Just write Weirton Steel Company, Dept. R-2, Weirton, West Virginia.

WEIRTON STEEL COMPANY

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

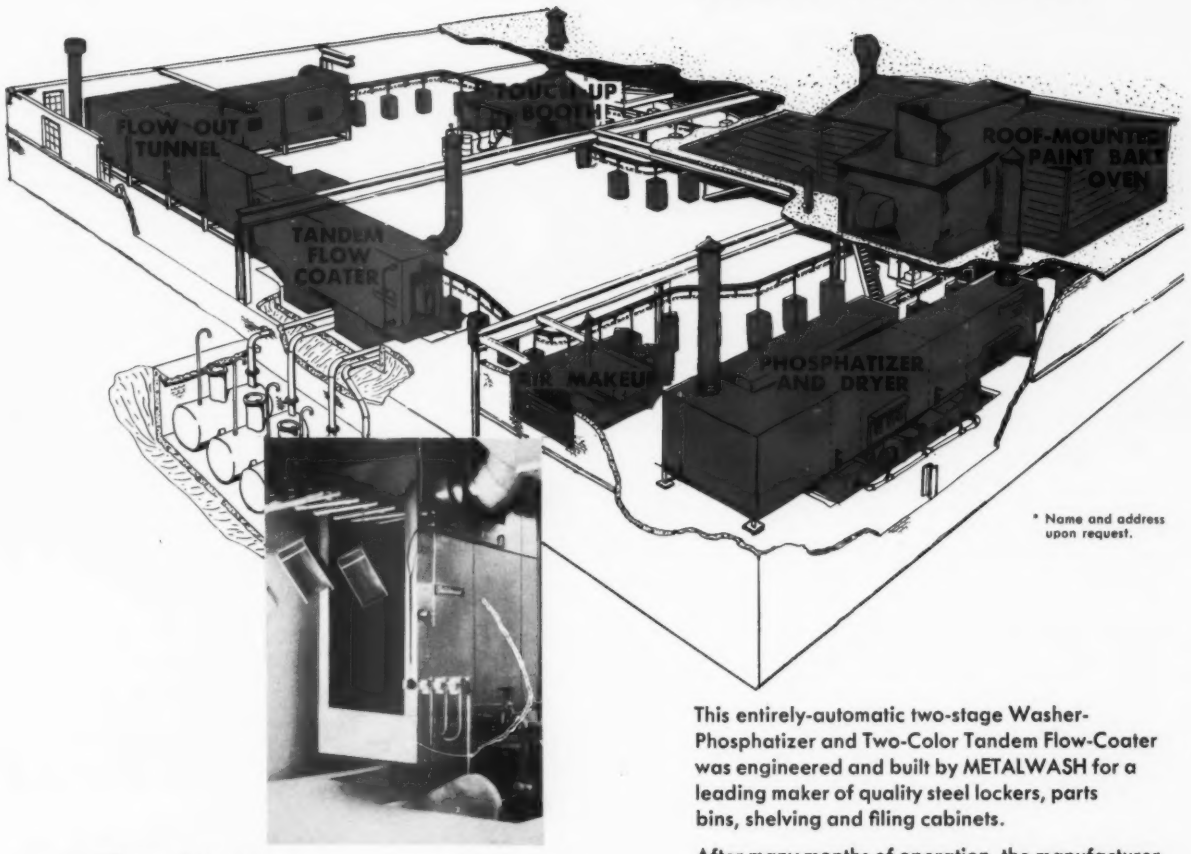
a division of

NATIONAL STEEL CORPORATION

Leading Manufacturer Says:

THIS Metalwash® ALL-AUTOMATIC TWO-COLOR PAINT FINISHING SYSTEM

QUADRUPLED PRODUCTIVE CAPACITY
IMPROVED PRODUCT QUALITY
RELEASED MEN FOR OTHER WORK
INCREASED SALES DRAMATICALLY



* Name and address upon request.

This entirely-automatic two-stage Washer-Phosphatizer and Two-Color Tandem Flow-Coater was engineered and built by METALWASH for a leading maker of quality steel lockers, parts bins, shelving and filing cabinets.

After many months of operation, the manufacturer reports that the METALWASH finishing system has increased his capacity by four times, has enabled him to manufacture a better product which exceeds Government specifications, increase his sales dramatically and free 13 men for work in other departments.

The superior training and long experience of METALWASH engineers in planning better, cost-saving finishing systems is available to you without cost or obligation. Write or call today for your Metalwash Finishing Survey.

Metalwash®
MACHINERY CORPORATION
Established 1926
900 NORTH AVE./ELIZABETH 4, N. J.

WASHERS
DRYERS
PICKLERS
PHOSPHATIZERS
BAKE OVENS
DEGREASERS

A photo tour of water heater production at American-Standard

One of the first steps in the production of a modern water heater is the cutting and sizing of sheet steel for the shell and tank. Coils weighing as much as 20 tons are purchased to exact width, then cut to the lengths required. A group of machines are combined to automatically decoil, clean, and shear the steel so that sheets are furnished in clean, flat form.

Salesmen learn how quality control during production aids in making quality water heaters. Here, they inspect the automatic seam welding of the water heater tank body. The formed sheet is fed into the automatic welder, which is completing the center seam weld.

Explanation of the thermostatic control on the heater to understand actual equipment under realistic conditions is made to John B. Allen, head of Allen Heating Supply, Inc., and Case Plumbing Supply, Inc., by Fred Lemkau, sales manager of American-Standard, Buffalo, N. Y.

UP-TO-DATE AND EFFICIENT facilities have long been the byword at American-Standard's Buffalo, N.Y. plant. To give our readers a "capsule" picture of this water heater manufacturing plant, MPM editors have scheduled a quick photo tour, touching on the highlights of water heater production at American-Standard. The present facilities and methods have all been installed or established within the past three years.

(Left, above) — This galvanizing "kettle" takes its name from early hand-dipping processes. The particular kettle shown is said to be one of the largest in existence, holding over 120 tons of molten zinc. Water heater tanks enter the kettle, at right, after successive baths in pickling, rinsing, and flux tanks. (Left, below) — A new method for welding zinc tanks after they have been galvanized is employed with this "Sigma" welding process. A low temperature copper brazing process, it unites pure copper wire with the zinc on the water heater to form a bronze alloy of high strength. Tank seams formed in this way are capable of withstanding pressures in excess of 350 pounds per square inch.

What has Kerns' Drawing Compound got to do with . . .

. . . ask Shwayder Bros., Inc.

Shown below is the coater where **Kerns' "Dry-Film"®** is applied to draw blanks in the production of deep drawn shells for Samsonite luggage. Shwayder engineers working with Dow Technical and Service Group tested and found **Kerns' "Dry-Film"® Drawing Compound** most suitable for mass producing magnesium luggage because it **permits severe draws** without the difficulty in cleaning experienced with other products.

ONLY KERNS OFFERS SO MUCH!

ECONOMY—cost per stamping is reduced because only 1 pound of "Dry-Film"® compound is required where 5 pounds of conventional wet type compound would be required.

DRAWABILITY—permits severe draws. Found to be unexcelled for aluminum and magnesium deep draws.

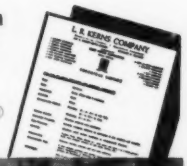
CLEANABILITY—coated parts will clean with utmost ease even after extended periods of storage.

COMPLETE SOLUBILITY—once dissolved (being a true solution) will not separate or settle out.

WIDE CHOICE OF APPLICATION METHODS—can be applied manually or with automatic equipment by spray, roller coater, flow coater or dip tank.

REMEMBER . . . Kerns' technical staff will be happy to work with you in solving light metals forging, drawing or extrusion problems.

***Try it . . . prove it to yourself by using Kerns'* MEMO BILLING TRIAL BASIS.**
Kerns will supply material for production test . . . no formal invoice rendered unless completely approved in production.



Write for Technical Data Sheet "Dry-Film"®

L.R. Kerns Company
2659 EAST 95th STREET • CHICAGO 17, ILLINOIS

Subsidiary Plant • KERNS PACIFIC CORPORATION, 630 N. BATAVIA STREET • ORANGE, CALIFORNIA

G.E.I. EXTRUDED ALUMINUM SHAPES

ADD BEAUTY . . . UTILITY TO FAMOUS PRODUCTS MANUFACTURED BY

Youngstown Kitchens

Five functional and decorative extruded aluminum parts used in the manufacture of Youngstown Kitchens' Jet-Tower Dishwashers and LO-Line Continuous Counter Tops are produced by General Extrusions, Inc. Needless to say, the most rigid quality requirements are in force.

G.E.I. is geared to accomplish special things in design, close tolerances and quality, rapid production and delivery—most of the time at REGULAR SOLID SHAPE PRICE. G.E.I. engineers are constantly searching for new standards and improvements, new ways to save the customer time, material and money.

GENERAL EXTRUSIONS, INC.
4040 Lake Park Rd. Youngstown, Ohio
SALES OFFICES AT ST. LOUIS, DETROIT, PITTSBURGH CHATTANOOGA, AND CLEVELAND
Consult your classified phone book under Aluminum Products.

GLIDE FOR KITCHEN UNIT DRAWERS
LOWER TUB RAIL FOR DISHWASHER
BASKET RAIL FOR DISHWASHER
UPPER TUB RAIL FOR DISHWASHER
HIGHLY FINISHED BORDER BETWEEN SINK UNIT AND WALL FOR LO-LINE CONTINUOUS COUNTER

Youngstown Kitchens' Jet-Tower Dishwasher is expertly engineered and manufactured with three G.E.I. shapes. The upper tub rails, lower tub rails and basket rails are from G.E.I. Before these shapes could be produced, all consideration had to be given to the fact that these extrusions would be subjected to extreme temperatures, detergents and wear and tear of rollers. G.E.I. came up with highly anodized, completely fabricated and durable shapes to help make Youngstown Kitchens' Jet-Tower Dishwasher a top quality product.

Youngstown Kitchens' new Woodcharm line employs a G.E.I. extrusion as the border between continuous counter and wall. Elegantly anodized, the G.E.I. shape blends in with decorative schemes and acts as buffer between sink unit and wall—resisting food splashes, detergents, etc. Drawers smoothly glide on an aluminum extrusion from G.E.I. Tappan range at far right also uses G.E.I. shapes for beauty and utility purposes.

New president N. J. MacDonald

NEMA approves re-organization plan

medallion home program, excise taxes and imports, were among the meeting highlights

AN MPM STAFF REPORT

THE NATIONAL ELECTRICAL Manufacturers Association's 33rd annual meeting, held at the Traymore Hotel, Atlantic City, N. J., November 9-13, was a busy and important meeting for electrical manufacturers.

At the general luncheon, held on Wednesday, November 11, Joseph L. Singleton, retiring president, presented his annual report, and the NEMA Planning Committee, chairmanned by W. C. Wichman, presented the new reorganization plan. Evidence of the keen interest in these reports is the fact that this luncheon had the largest attendance of any single function in the history of NEMA.

MPM PHOTO

NEMA *Planning Committee — Left to right: F. H. Roby, executive vice president, Federal Pacific Electric Co.; D. J. O'Conor, Jr., president and general manager, Formica Corp.; J. J. Mellon, chief engineer, Allen-Bradley Co.; A. A. Berard, president, Ward Leonard Electric Co.; J. R. MacDonald, chairman of the board and president, General Cable Corp.; W. C. Wichman, vice president, General Electric Co., and general manager, Hotpoint Div. C. H. Bartlett, vice president, Apparatus Products, Westinghouse Electric Corp.; and R. Stafford Edwards, president, Edwards Co., Inc. were not present.*

Annual association report

Singleton, senior vice president, Industries Group, Allis-Chalmers Mfg. Co., first took a glance back into the history of the organization. He reported that it was formed in 1926 with 289 member companies grouped into 38 product sections. Today, he said, NEMA has 541 members and 65 product sections.

Committee activities during 1959 included the following: The NEMA excise tax committee started a concerted drive on the entire question of discriminatory aspects of the Federal Excise Tax structure and made plans to appear later this year before a Congressional Committee on the excise tax problem as it relates to electrical products. The Codes and Standards Committee launched surveys among manufacturers and worked with power suppliers to determine industry attitudes on the possible application of higher utilization voltages for residences.

The appliance sections were very active in 1959. The Room Air-Conditioner Section conducted a successful "Beat the Heat" promotional campaign, and produced a first product standard on this appliance; the Electric House Heating Equipment Section planned its first national Electric House Heating Exposition to be held on March 21 through 23, 1960, at the Sherman Hotel, Chicago; the Electric Water Heater Section pushed electric water heater promotions in a series of personal visits with utility company executives; and the Electric Fan Section conducted its annual fan window display contest.

New organizational format

W. C. Wichman, vice president of the General Electric Co., general manager of Hotpoint Division, and chairman of the Re-organization Planning Committee, presented the proposed changes to the membership. In essence, the Planning Committee called for the following changes: 1) Formation of eight semi-autonomous divisions, 2) broadening of NEMA's product scope pattern, and 3) expansion of the association's membership base.

Divisions will be composed of Sections whose member companies produce consumer products; lighting equipment; industrial equipment; building equipment; insulating materials; wire and cable; generation, transmission and distribution equipment; and industrial electronics and communications equipment.

The *Consumer Products Division* will replace the old *Major Appliance Division* and include some additional sections. It will now consist of the following Sections: Room Air-Conditioner Section, Dehumidifier Section, Electric Range Section, Household Refrigerator & Freezer Section, Electric Dishwasher Section, Electric Water Heater Section, Electric Housewares Section, Electric Fan Section, and Electric House Heating Equipment Section.

In presenting the Planning Committee's recommendations, Wichman recalled the many changes that have taken place since NEMA was organized. Included are such growth factors as the rise of "*our $9 billion appliance industry* which did not exist when NEMA was formed; the fact that the electrical industry is expanding twice as fast as the national economy itself; the demand of

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"Automated" lunchrooms like this one at the Walworth Co., Braintree, Mass., are increasingly providing wholesome food service for employees at meal and snack time. Foods vended include hot beverages, soft drinks, fresh sandwiches, pastry, ice cream, hot canned foods, etc.

Automatic merchandising sets its "Sights on the Sixties"

gross sales of automatic vending machines expected to reach alltime high for 1959

An electronic "brain" that returns exact change, in both bills and coins, for paper money up to $9 in value, and rejects counterfeits, has been introduced. The unit also has slots for coins.

AN MPM STAFF REPORT

THERE IS AN OLD CLICHE that goes, "We've got everything from soup to nuts," but this is not to be taken literally unless you attended the 13th annual exhibit of the Automatic Merchandising Industry at Chicago's Navy Pier, Oct. 31-Nov. 3. There, the old cliche applied . . . with extras.

The "soup to nuts" category included such items as an automatic vending cafeteria which dispenses more than 100 different food and drink items; a machine that vends crushed ice with any one of six soft drinks; a unit with an infra-red oven, set in an attractive cabinet, that warms or toasts—or vends cold sandwiches as desired; an automatic milk shake vendor which serves the "shakes" in three different flavors; and fresh-brewed coffee machines which not only serve cream and sugar, but dispense coffee brewed strong, medium, or light.

The "extras" were represented by an electronic "brain" that returns exact change in bills and coins for paper money up to nine dollars in value and rejects counterfeit bills; a postage stamp vending machine holding 1,600 folders, with eight pushbutton selectors for a variety of stamp purchases; and a new version of the dollar bill changer introduced at last year's exhibit.

According to official National Automatic Merchandising Association figures, official attendance at the show was 8,000, making this the best attended of any of the automatic merchandising exhibits. Underscoring this attendance figure is the fact that gross sales of goods and services dispensed by automatic machines are expected to increase by nearly seven per cent for 1959 when final totals are tabulated. NAMA says these goods and services will be worth $2,218,700,000.

This reporter was privileged to obtain a seat on a special train which toured the show one hour before the opening on Nov. 2. Three highlights of the tour were the automatic cafeteria by Rowe

Mfg. Co., New York, N.Y., a comparison of the first model ever introduced by Wittenborg Co., Brooklyn, N.Y. with its latest model, and a display by The Vendo Co., Kansas City, Mo., which encompassed 80,000 square feet, the largest area ever utilized by one company at an automatic merchandising show.

Theme of the combined convention-exhibit was "Sights on the Sixties," and industry executives took dead aim in predicting bigger and better things to come. The consensus of opinion was that automatic vending machines, and goods and services vended, will be as different in the 60's as today's machines are from the models made just after World War I.

The growing utilization of automatic cafeterias in the feeding of employees, students, and others was predicted by Aaron Goldman, president of G. B. Macke Corp., Washington, D.C. "Automatic cafeterias can already vend about 90 per cent of the kinds of food which most workers want for their 'meal away from home,' and they do it efficiently and in a most sanitary manner," said Goldman.

New packaging to make vended food more attractive was foreseen by Arthur D. Stevens, assistant vice president of The Vendo Co. Stevens said that "experimental work is being conducted in designing containers in a rainbow of colors and in every possible shape compatible with existing vending equipment."

William C. McConnell, Jr., chief executive of Automatic Merchandising Corp., Chicago, a vending operating company, said, "the equipment of operating companies in recent years indicates a growing demand for more versatile vending machines. I mean a *single* machine which can offer the consumer a wide selection of products."

Douglas Moore, vice president of Davidson Automatic Merchandising Co., Los Angeles, foresees a vast increase in services rendered by automatic merchandising. "A vast market will be opened by such devices as the around-the-clock coin laundry store, the insurance policy vendor on highways and at airports, the automatic ticket seller, and the automatic selling of books, newspapers, and magazines.

Newly-elected officers of NAMA were named Nov. 2. They included Thomas B. Donahue, vice president of National Vendors, St. Louis—president; Herb A. Geiger, Geiger Automatic Sales Co., Milwaukee—1st vice president; Norval B. Rader, Automatic Canteen Co., Chicago—2nd vice president; and Henry Davidson, Davidson Automatic Merchandising Corp., Los Angeles—treasurer.

MPM PHOTO

Thomas B. Donahue, vice president of National Vendors, St. Louis, is the newly-elected president of NAMA.

NAMA shop maintenance, repair clinic

AN MPM STAFF REPORT

On Oct. 31, the National Automatic Merchandising Assn. held a Shop Maintenance and Repair Clinic at the Conrad Hilton Hotel in Chicago. Panelists included Charles Mananian, MAB Industrial Vendors, Inc., Los Angeles; Russell Penly, National Rejectors, Inc., Atlanta, Ga.; George Zeun, Vendomat Corp., Baltimore, Md.; and John Totten, Industrial Vendors, Inc., Hammond, Ind. The moderator was M. J. Estrem, Vend-O-Matic Sales, Inc., Minneapolis, Minn.

Questions were asked of the panelists pertaining to route and location service and maintenance, shop functions and operations, and general aims to good maintenance.

In reply to questions concerning the type of shop layout, and repair and test equipment needed for a shop maintenance program, Penly presented a plan for specialized repair stations for particular parts. This included having stations in a logical order for repair work along a well-lighted area.

The question of how to handle painting of machines drew a variety of comments. Mananian told the audience that his firm's products were painted by an outside contractor and that he found this more efficient because of the economy of space saving. He added, however, that his firm is planning to build a larger plant which will include facilities for a paint spray booth.

Zeun said that his firm uses fulltime help, and has its own paint spraying facilities. Another approach was offered by Totten, who said that his firm uses parttime help for economy and convenience, and still managed to paint three or four major machines per day.

Points agreed upon by all of the panelists were that the man servicing the machines should be a "good public relations man" as well as a man who can handle minor operating difficulties; major repairs should go back to the shops; rotation and modernization of equipment depends, to a large extent, on the size and location of the operation; safety in the shop should be stressed at all times; and "training schools" conducted by manufacturers should be well attended by both servicemen and maintenance men of operating companies.

MPM PHOTO

Panelists at Shop Maintenance and Repair Clinic are (l. to r.): John Totten and George Zeun; M. J. Estrem, moderator; and panelists Russell Penly and Charles Mananian.

THINKING OF ENTERING THE ELECTRIC HEAT FIELD?

Then you should know...

TYPE 1A61
World's Largest Seller

TYPE 1A65
Elegant New Companion

The Industry's Standard of Beauty And Performance

IN ELECTRIC HEAT THERMOSTATS... WHITE-RODGERS IS THE LEADER!

Easily attached thermometer now available at slight additional cost.

More than 50 electric heat equipment manufacturers put their brand names on White-Rodgers 'stats . . . using several times more than all other makes combined.

If your organization is considering electric heat, as a possible new product, we at White-Rodgers offer you the experience gained through leadership to assist you with any control problem you may encounter. Our technical staff is at your service . . . just write us.

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WHITE-RODGERS

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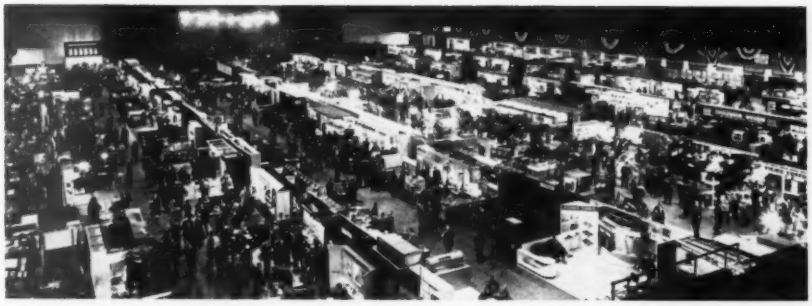
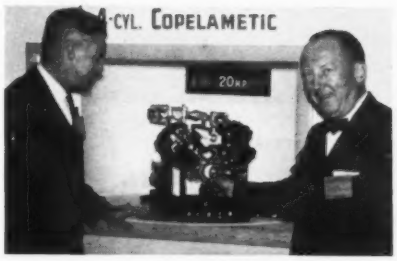
ARI sponsors 11th exhibition and approves reorganization



View of 11th exposition of ARI, *Convention Hall, Atlantic City, N. J.*



D. A. Voorhies, C. V. Hill & Co., Inc., and Rudy Berg, ARI *president, Copeland Refrigeration Corp.*

dues structure, fiscal year, tenure of board of directors some of changes made by ARI

J. B. McFarland, Rolled Steel Products, and Al Pinder, Avon Tube Div., Higbie Mfg. Co.

J. Pichiotino and Randy Burns, Redmond Div., Controls Co.

AN MPM STAFF REPORT

CONVENTION HALL, Atlantic City, N.J., was the scene of the 11th Exposition of the Air-Conditioning and Refrigeration Industry, November 2-5. Exhibitor unveiled many new products and component parts

Reorganization approved

Rudy Berg, ARI president, and vice president of Copeland Refrigeration Corp., announced that ARI membership at its meeting held on November 2 approved recommendations of the association's board of directors changing By-Laws and procedures. The changes are a result of a two-year study as to how the association can better serve the public and industry. He stated, "The soundness of those recommendations and interest of the members is evidenced by the fact that 94 per cent of the votes cast were in the affirmative, with over 80 per cent of the membership participating in the vote." Specifically, the decisions made will limit future applications for membership to manufacturers of products coming within the scope of one or more ARI product sections. The dues structure is also changed so as to be more equitably proportioned among members. Berg announced that the fiscal year was changed to coincide with the calendar year. The annual meeting was changed from Spring to Fall, and the next annual session will be held November 27-30, 1960, at the Hollywood Beach (Fla.) Hotel.

The members also agreed to extend the present terms of the current board of directors by seven months in order to comply with the change to the calendar year.

Copper-clad Viking girl before exhibit of Viking Copper Tube Co.

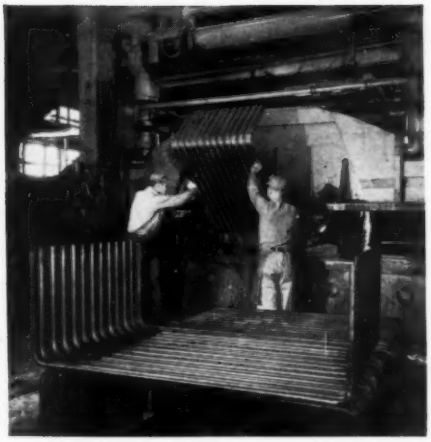
EXCLUSIVE MPM PHOTOS

Jim Rodgers, Jr., and Arnold Petersen, White-Rodgers Co., and Richard W. Knight, Meier Electric.

Wm. J. Sullivan, Rochester Products Div., General Motors Corp.

(Below) — Jim Wylie, Ebco Mfg. Co.

(Below) — N. J. Huber, Plastics Div., Koppers Co., Inc.



Forming sides *of a Flo-Matic box at Powell Pressed Steel Co., Powell uses Youngstown Hot-Rolled and Cold-Rolled Sheets, reports operational uniformity, low fabrication cost.*

Accent on Excellence

Youngstown hot-rolled and cold-rolled sheets

POWELL PRESSED STEEL SINCE 1920

ORIGINATORS OF COLD FORMED, ALL STEEL MATERIALS HANDLING CONTAINERS

Ingenious Flo-Matic Systems simplify flow of work in process, eliminate costly, multiple production handling.

Fabrication of Flo-Matic Systems involves shearing, blanking, piercing, pressing, forming and welding. The Powell Pressed Steel Co., Hubbard, Ohio, uses Youngstown Hot-Rolled and Cold-Rolled Sheets for consistent specified product quality. Thus, Youngstown steels help Powell keep product cost well in line—a matter of no small importance in selling to the materials handling equipment market.

Wherever steel becomes a part of things *you* make, the high standards of Youngstown *quality*, the personal touch in Youngstown *service* will help you create products with an "accent on excellence". The Youngstown Sheet and Tube Company, Youngstown, Ohio. Carbon, Alloy and Yoloy Steel.

QUALITY YOUNGSTOWN SERVICE

Youngstown

Home laundry conference highly successful

AN MPM STAFF REPORT

UNDER THE BANNER "Home Laundry Meets the Challenge of the 60's," the American Home Laundry Manufacturers Association sponsored its 13th National Home Laundry Conference on October 29 and 30 at the Statler Hilton Hotel, New York City. Included in attendance were representatives of home laundry manufacturers, home economics teachers and educators, extension agents and utility home service directors, household equipment editors, and suppliers to the home laundry industry.

Juel M. Ranum, Whirlpool Corp., was featured speaker on the final day of the conference. He spoke on "American Appliances in the Moscow Fair."

MPM PHOTOS

(Lower photo, left to right at speakers table) — Harold Bull, Norge; Anne Anderson, Better Homes & Gardens; *Juel Ranum, and Parker Erickson, Easy. (Right photo, left to right at speakers table) — Jesse Cartwright, Norge; George Lamb, Lamb & Long; and Guenther Baumgart,* AHLMA.

The home laundry conference was under the direction of Parker H. Erickson, chairman, home laundry conference planning committee (Easy); Jesse Cartwright, vice chairman, home laundry conference (Norge); H. L. Travis, chairman AHLMA board of directors (Kelvinator); and Guenther Baumgart, AHLMA president.

Among the speakers on the Program were Gladys Miller, editor, *New Homes Guide;* Herman York, architect, New York City; R. C. Connell, Philco; Helen Tangen, Hamilton; Marilyn Pogue, Ironrite; Joseph B. Smith, Westinghouse; Dorothy Diamond, *Printers' Ink;* Betty Borgman, Maytag; Ruth Meimbresse, Philco; Bernice Stilwell, Westinghouse; Flora G. Dowler, Manufacturers' Light and Heat Co.; Lola Marie Drew, Texas Technological College; and Catherine Sullivan, University of Illinois.

"ALMA" awards

The second annual "ALMA" awards for outstanding journalism in home laundry education were presented to newspaper women at a luncheon during the first day of the conference. The winners are: Wanda Wilson, Home Fashions Editor, Ft. Lauderdale, Fla. Daily News; Marian Ingersoll, Home Editor, Champagne-Urbana, Ill. News-Gazette; Mary Brandvig, Woman's Editor, Redondo Beach, Calif. Daily Breeze; Carol Richardson, Homemaking Editor, Charleston, W. Va. Daily Mail; and Max Blackman, Fashion Editor, The Houston Chronicle, Houston, Tex.

Much ado about washing

One of the highlights of the second day of the conference was an interesting sketch designed to introduce a new method of teaching basic facts about laundry. The skit portion of the presentation was a take-off on many of Shakespeare's characters. Principal subjects covered in the skit were *Detergents* by Mary Huck, Frigidaire; *Bleaching* by Cleo Cottrell, General Electric; *Water* by Virginia Van Nostrand, Whirlpool; *Stains* by Frances Michael, Hotpoint; and *Fabric Softeners* by Camille Beauchamp, Westinghouse.

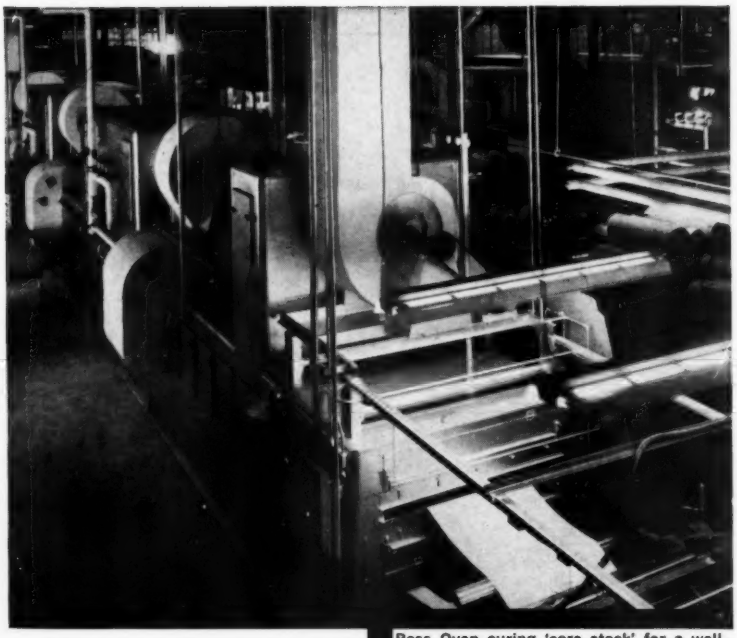
Dr. Jules Labarthe, Carnegie Institute of Technology, spoke on a survey of 1960 fabrics, and Guenther Baumgart presented a review of the services and references available from AHLMA.

The final function of the meeting was the luncheon on Friday afternoon. The featured speaker was Juel M. Ranum, assistant to the chairman of the board and director of public relations, Whirlpool Corp. He spoke on "American Appliances in the Moscow Fair." He presented his observations, gleaned during his five-week visit to the Moscow Fair this past summer, and provided an interesting fifteen minute sound and color documentary film. Anne Anderson, *Better Homes and Gardens,* who served as chief demonstrator at the appliance exhibits at the Fair, also gave her impressions.

As had been the custom in the past, leading manufacturers of home laundry equipment had their latest models on display for demonstration during the two-day meeting.

ROSS
Air Systems

Engineered Atmospheres for Better Processing



Ross Oven curing 'core stock' for a well-known cabinet top material.

variety of ovens

...a measure of engineering versatility

The ovens listed were designed, constructed and installed by J. O. Ross Engineering during the past few months. They are selected from an extensive list of Ross Oven sales to emphasize the essential engineering quality of versatility. Anyone can design an enclosure and blow in some hot air. Speaking broadly that could be called an oven. But note the distinctly different baking or curing requirements and the temperature levels required by the different operations. It's this close temperature work that calls for skilled and experienced engineering.

The other useful bit of information that this list emphasizes is that Ross Ovens are 'custom made' for each project involved. There are so many controlling factors that it would be very impracticable to try to fit any 'standard' oven to the work.

For that oven you are planning to install, your interests would be served best by having Ross versatile skill do the design, construction and installation.

1 ...FOR STRIP COATING LINE

continuous; 3-zone oven as one element of complete Ross/Waldron Strip Coating Line (aluminum); zone temperatures 200°F, 400°F and 650°F; critical timing within zones.

2 ...FOR AGEING ALUMINUM

batch; featured by Ross high velocity adjustable nozzles with special spacing to assure uniform temperature throughout the oven; input air at 500°F.

3 ...FOR CURING WELDING RODS

continuous; 3-pass, 5-zone baking oven followed by cooling zone, totalling some 200 feet in length; zone temperatures range from 70°F to 800°F; rate of moisture removal from the flux is extremely critical and must be closely controlled in the different temperature levels; timing as well as temperature control are vitally important.

4 ...FOR PROCESSING SPONGE RUBBER

continuous; designed for 1, 2 or 3 zone operations; maximum temperature 450°F. Zoning to take care of (1) sag or forming, a particularly critical step; (2) blowing or foaming; (3) curing, each at different temperature levels and all 'tricky' operations; permissible variations in temperature not over ±5°F.

M-R

J.O. ROSS ENGINEERING

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ATLANTA • BOSTON • DETROIT • SEATTLE • LOS ANGELES • MT. PROSPECT, ILLINOIS

Two billion dollar volume in '60 predicted for paint industry

AN MPM STAFF REPORT

ANNUAL SALES VOLUME for the paint, varnish and lacquer industry in 1960 will surpass the two billion dollar mark for the first time in history. This was predicted by President Joseph F. Battley as he addressed the 72nd annual meeting of the National Paint, Varnish and Lacquer Assn. in Atlantic City, N.J., Oct. 18-21.

Said Battley, "Back in 1947, when I first joined the staff of your association, the paint industry was trying to hit the one billion dollar mark in annual sales for the first time. This year we will have sales of well over 1.75 billion dollars—a new record. Next year we will soar over the two billion dollar level."

The industry's sales volume is becoming more and more dependent upon the hidden power of color, according to Battley. Because of this, he said, "We have developed many new and unique color promotion ideas and merchandising materials. A new series of color booklets, designed to further educate the consumer on the advisability of using paint colors in home and institutional decor, will be published in the new year."

Battley warned, however, that future competition will be stiffer than ever and that the paint, varnish and lacquer industry must go all out if it is to continue and accelerate the pace of growth.

Management workshop sessions were held in conjunction with the meeting.

Federation of Paint and Varnish Production Clubs meeting

AN MPM STAFF REPORT

THE KEYNOTE ADDRESS was delivered by Herbert B. Woodman, president of Interchemical Corp. Woodman's subject was "What's Past Is Prologue." He stated that the United States is faced with a new challenge for world leadership and, while we have achieved the highest standard of living in history, we are now on the verge of much greater things. He believes it's important that we have better relations between management and the scientist in order to achieve our goals, and that both groups must make changes in their thinking in order to accomplish them.

A feature of the meeting was the Joseph J. Mattiello Memorial Lecture, given by Vincent C. Vesce, technical director of Harmon Colors, National Aniline Div., Allied Chemical Corp. His subject, "Exposure Studies of Organic Pigments in Paint Systems," was augmented with striking color reproductions.

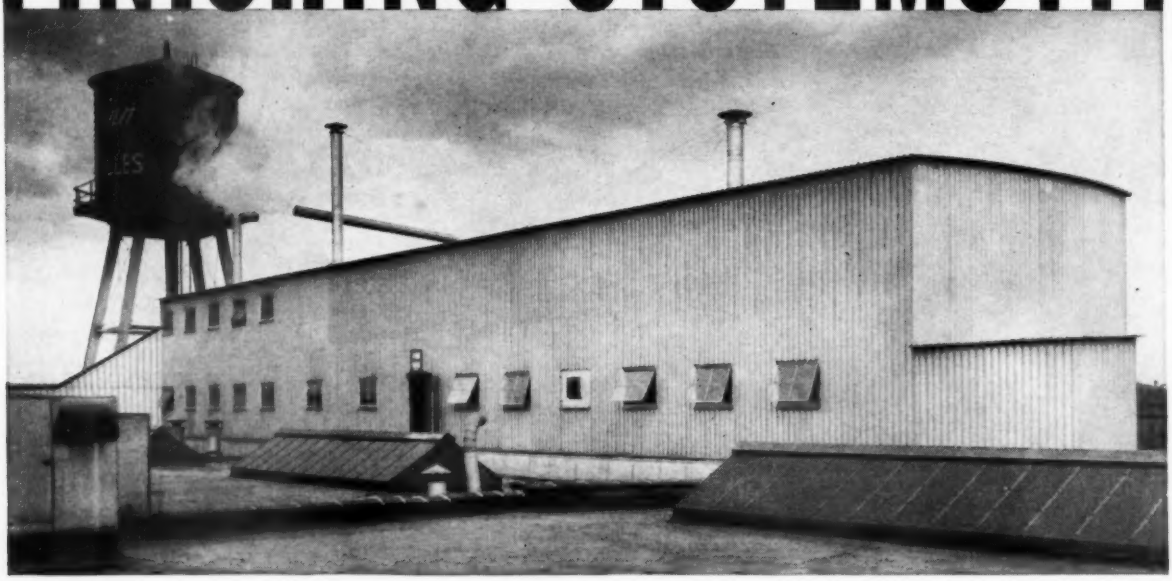
Concurrent with the FPVPC annual meeting, the 1959 Paint Industries Show was held at Convention Hall, Atlantic City, N.J.

EXCLUSIVE MPM PHOTOS

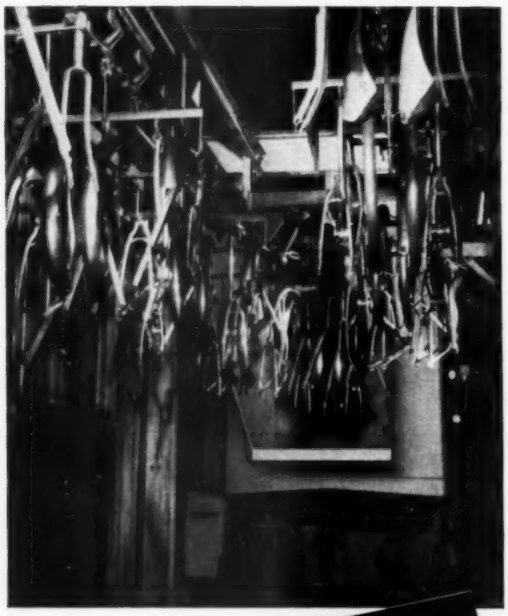
Herbert B. Woodman, president, Interchemical Corp., who delivered the keynote address, "What's Past Is Prologue."

(Below) Selected photos of exhibitors at the 1959 Paint Industries Show, Convention Hall, Atlantic City, N. J.

FINISHING SYSTEMS...



Self-Housed Equipment Installed on Roof Saves Over 10,000 Sq. Ft. of Manufacturing Floor Space!



Over a period of twenty-three years the Mahon company has worked in close cooperation with Arnold, Schwinn & Co., manufacturers of famous Schwinn Bicycles, in developing finishing equipment which now produces what is acknowledged the highest quality finish, the most durable finish, and the finest appearing finish in the industry.

The three Finishing Systems installed by Mahon in the past twenty-three years have saved Arnold, Schwinn & Co. over 10,000 Sq. Ft. of valuable manufacturing floor space inside the company's two-story plant. In the first Finishing System, installed in **1936**, only the Spray Booths were located inside the plant; other units, including two Finish Baking Ovens together with Heating Equipment, Recirculating Fans, etc., were housed on the roof.

In **1950**, another complete self-housed Prime-Coat Finishing System, shown above, was installed in its entirety on the roof—the design being a two-level arrangement with Dry-Off Oven, Finish Baking Oven and Heating Equipment Room on the upper level. This System handles Cleaning, Rust Proofing and Prime Coating of all parts produced which receive their 2nd and 3rd or final coat in the other two Finishing Systems.

In **1956**, a third Finishing System was installed with 2nd Coat Finish Baking Oven, Cooling Area, 3rd or Final Coat Finish Baking Oven and Heating Equipment Room located on the Roof. Electrostatic Spray Booths for this System were located on the second floor of the plant directly below.

When you consider buying a new finishing system, or any unit of finishing or processing equipment, you, too, will want to discuss methods, equipment requirements and possible production layouts with Mahon engineers . . . you'll find them better qualified to advise you, and better qualified to do the initial planning and engineering which plays such an important role in the ultimate operating efficiency of specially designed equipment of this type.

See Sweet's Plant Engineering File for Information and Representative Installations, or Write for Catalogue A-660

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York, Chicago, Los Angeles and San Francisco

. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE** to **YOU!**

MAHON

Opening this year's Forum were (bottom row, l. to r.): Dr. Otis Everhart, head of the Department of Ceramic Engineering, Ohio State University; Dean H. A. Bolz, dean of the College of Engineering; OSU; R. M. King, professor of ceramic engineering, OSU; (top row, l. to r.): John C. Oliver, managing director of the Porcelain Enamel Institute; and J. B. Willis, Pemco Corp., chairman of this year's Forum.

The processes and equipment symposium included, (bottom row, l. to r.): James H. Rice, Binks Mfg. Co.; R. C. Ashcom, Specialties, Inc.; R. J. Westerholm, Norton Co.; L. L. Moss, Ferro Corp.; (top row, l. to r.): H. Afflerbach, Ingram-Richardson, Inc.; J. B. Vernetti, Chicago Vitreous Corp.; and Clark Hutchison, Ingram-Richardson, chairman.

New developments, one-coat enameling highlight 21st annual shop practice forum

AN MPM STAFF REPORT

IN THE WORDS of Dr. Tennyson Guyer, featured speaker at the 21st annual Porcelain Enamel Institute Shop Practice Forum banquet, "There is no substitute for enthusiasm." The appropriateness of this gentleman's words was aptly demonstrated by members of the PEI at this year's Forum, held at Ohio State University, Columbus, Ohio.

The enthusiasm, readily apparent in such people as James B. Willis, Pemco Corp., this year's chairman, and John Oliver, managing director, PEI, overflowed to the symposium chairmen and speakers and to members in attendance at each session. Even the latest PEI members caught the spirit. Patricio Sada and Ralph Baumann, Troqueles y Esmaltes, S.A., Monterrey, Mexico, were attending their first forum and strongly indicated they would be back next year.

H. A. Bolz, dean of the college of engineering at OSU, welcomed PEI members with these words: "This is like welcoming a member of the family. The forum keeps faculty and students up to date on industry problems, something textbooks can't do. We know this is valuable for you and for us, for when learning stops, personnel obsolesence sets in."

Every paper presented at the Forum issued something of value, but the topic of possible paramount interest was one-coat enameling. As F. W. Nelson, A. O. Smith Corp., chairman of this symposium, pointed out, "The future of the industry lies in one-coat enameling; this is our hope."

A paper dealing with conversion to one-coat porcelain enameling was presented by R. L. Hadley, General Electric Co., Tom Stalter, Pemco, and E. L. Nobles, Ferro, presented papers on one-coat white processes; new steel developments for one-coat applications were described by R. L. Meyers, Armco Steel, M. B. Gibbs, Inland Steel, and D. J. Blickwede, Bethlehem Steel; and S. C. Davis, Daco Corp., presented a direct-on application of porcelain enamel utilizing citric acid.*

New equipment introduced

A number of new developments were introduced in the field of processes and equipment. R. C. Ashcom, representing Specialties, Inc., Charlottesville, Va., talked of automatic colorimetry by electronic solution and control. His machine, called the "chromosorter," classifies and defines all colors of the spectrum. The machine consists of a console and sensor. The sensor detects primary colors, while the console, by means of dials, can compute 27 different shades of the primary color, including those not readily seen by the human eye.

to Page 95 →

Shown here are (l. to r.): F. W. Nelson, A. O. Smith Corp., chairman of the one-coat porcelain enameling symposium; R. L. Myers, Armco Steel Corp.; D. J. Blickwede, Bethlehem Steel Co.; and M. B. Gibbs, Inland Steel Co.

Other members of the one-coat enameling panel were (l. to r): Thomas L. Stalter, Pemco Corp.; S. C. Davis, Daco Corp.; E. L. Nobles, Ferro Corp.; and R. L. Hadley, General Electric.

PHOTO BY KARSH OF OTTAWA

"We can depend on Sharon for steel of consistent quality"

—CHARLES MacINTOSH, Supt. of Assembly, Smith-Erie Div., A. O. Smith Corp.

"We've found Sharon Steel meets specs—then holds to them," says Charles MacIntosh, Superintendent of Assembly at A. O. Smith's Erie Division. "That's probably the most important single consideration to those of us responsible for fabrication," MacIntosh continues.

Shown here with Harold L. Ripley, Supt. of Machine Shop, MacIntosh examines a stainless steel stamping—a part for A. O. Smith's new line of ultra-modern gasoline pumps. He concludes, "For finish, too, it's hard to beat stainless from the *Sharon Steel Corporation, Sharon, Pa.*"

SHARONSTEEL **SHARON** *Quality* **STEEL**

41st National Metal Exposition and Congress well attended

CP C-OMatic, a new CO_2 automatic welding equipment package introduced by the Welding Products Div., A. O. Smith Corp., is designed for high-speed production. The unit provides high deposition rates, deep penetration, low-hydrogen weld metal, visible arc, and no slag removal.

AN MPM STAFF REPORT

THE 41ST NATIONAL METAL Exposition and Congress of the American Society for Metals, held at the International Amphitheatre, Chicago, November 2-6, attracted an estimated 50,000 from all phases of the nation's $150 billion metalworking industry. Hosts to the visitors were 400 exhibitors from 40 states and several foreign countries. The show was the 11th staged in the "Windy City."

Among the exhibitors represented were materials producers, fabricators, equipment manufacturers, and firms with new processes to demonstrate.

Technical presentations, 275 in all, were given prior to, and concurrent with, the show, in several downtown Chicago hotels. Among the highlights of these programs was the address of Thomas F. Patton, president of Republic Steel Corp., before the 4th annual ASM Awards luncheon Tuesday noon (November 3) in the Grand Ballroom of the Hotel Sherman. His subject was "Men, Money, and Ignorance."

Of interest in the paint finishing field was a new "dry" phosphatizing process which eliminates water solutions and applies protective phosphate coatings to metal parts at reported savings in equipment investment, operating costs, and floor space. The equipment was exhibited by the Du Pont Electrochemicals Dept., in conjunction with G. S. Blakeslee & Co., Chicago, which is cooperating in the development. *(See September, 1959 MPM, Page 23, for details on similar cleaning and painting equipment.)*

A new hopper feed and lightweight gun, driving an 8-32 wire thread insert, is part of a complete line of automated power inserting equipment exhibited by the Heli-Coil Corp.

In the fabrication field, a new miniature automated inserting tool for high speed production installation of wire thread inserts was demonstrated by the Heli-Coil Corp., Danbury, Conn. Capable of driving up to 1200 per hour, the hopper feed and lightweight gun combination is designed specifically for automated assembly line operation in any type or size of material where higher loading strength and greater resistance to wear are required in tapped holes.

A new automatic CO_2 welder, designed for high speed production, was exhibited by the Welding Products Div., A. O. Smith Corp., Milwaukee. Featured in the unit is an automatic welding head coupled with a 100-per cent duty cycle, 600 - ampere constant - potential power source. The equipment uses small diameter wires specifically designed for welding mild and medium carbon steels.

A portable infra-red analyzer for faster, more flexible application in the measurement of gases, vapors, and liquids in industrial process streams and atmospheres was offered by the Mine Safety Appliances Co. Called the Model 300 LIRA analyzer, the unit weighs only 30 pounds, and its compactness and light weight permit transfer of the instrument between selected test areas.

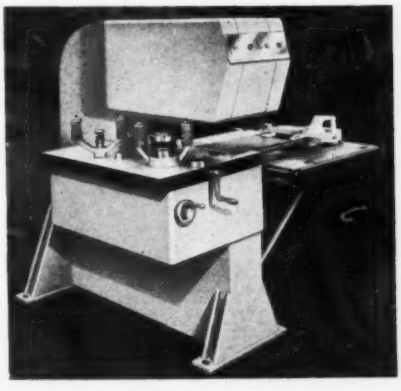
A toolmakers microscope with new reset revolution counters, permitting direct reading to three decimal places with the fourth decimal place appearing on a drum, was featured by Gaertner Scientific Corp., Chicago.

A "Super 30 Fabricator," introduced by Wales-Strippit, Inc., Akron, N. Y., is a single-station, high speed punch press with a throat depth capacity of 30 inches. For straight line punching, it is said to handle a 30-inch workpiece of any length, utilizing the multiple-stop gauging system. For production punching with the Strippit Duplicator, its maximum work size is 25 inches by 30 inches.

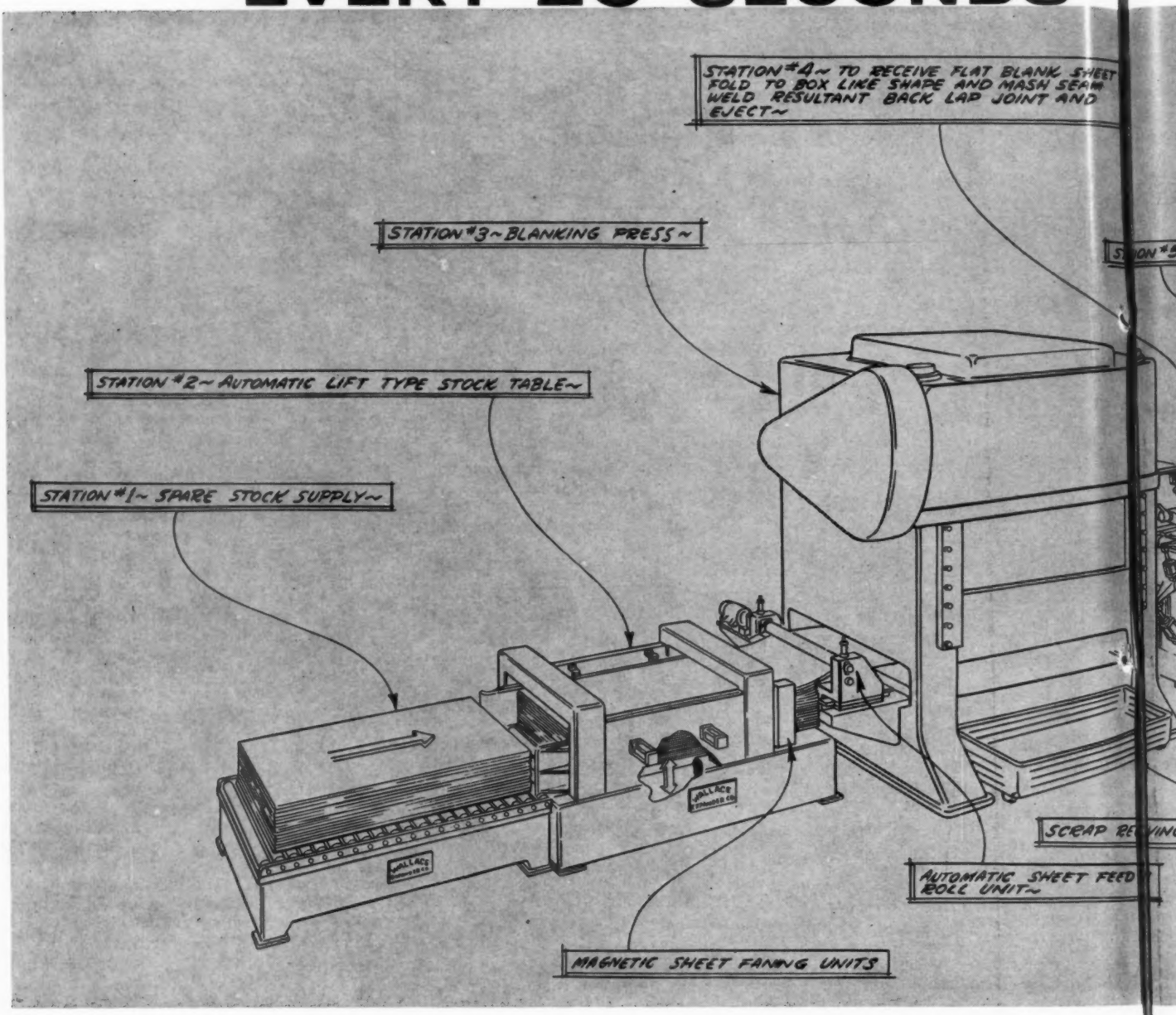
Techniques for applying Loctite sealant, which is said to virtually eliminate the labor of application, was a feature of the exhibit at the American Sealants Co. booth. Meeting the requirements of modern automation, the sealant can be applied automatically on production lines, or by the mass pre-treatment of parts to be assembled. The sealant is a thin plastic which is said to make ordinary threaded fasteners self-locking.

In the spray painting field, a new airless spray painting system, latest development of Binks Mfg. Co., Chicago, was introduced. The system is especially suited for painting where overspray must be held to a minimum. Other new products featured were the Wren air brush and automatic finishing equipment.

On the adjustable table of the Strippit Super 300 Fabricator are the machine's two tool holders and corresponding dies. At left is the holder for punching holes up to 1¼ inch; the holder for punching holes larger than 1¼ inch, up to and including 3½ inch, is shown at right.



EVERY 20 SECONDS


STATION #4 ~ TO RECEIVE FLAT BLANK SHEET FOLD TO BOX LIKE SHAPE AND MASH SEAM WELD RESULTANT BACK LAP JOINT AND EJECT ~
STATION #3 ~ BLANKING PRESS ~
STATION #2 ~ AUTOMATIC LIFT TYPE STOCK TABLE ~
STATION #1 ~ SPARE STOCK SUPPLY ~
SCRAP RE
AUTOMATIC SHEET FEED ROLL UNIT ~
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A WALLACE EXPANDER FORMS A WELDED CYLINDER INTO... *A SQUARE*

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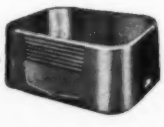

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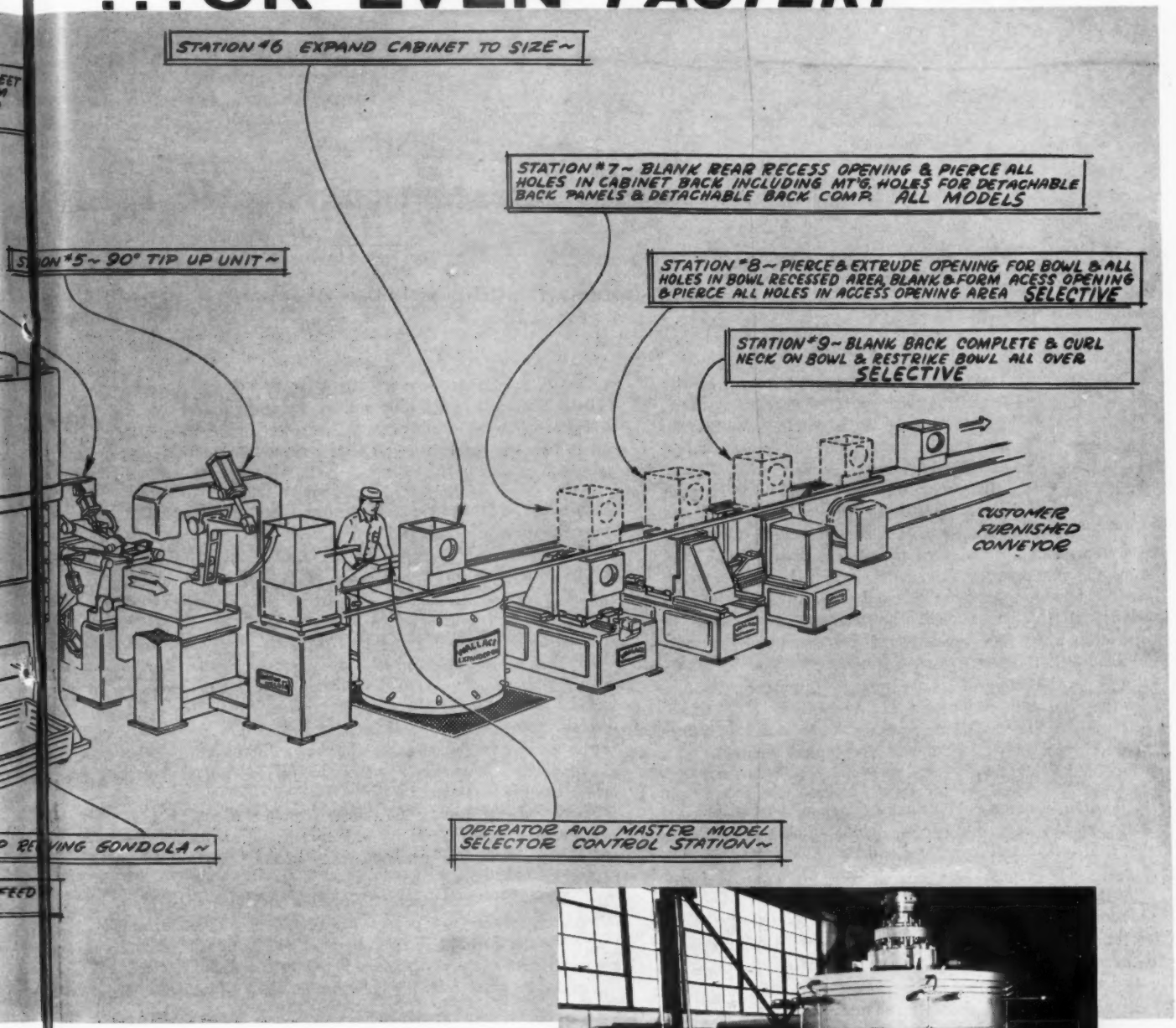
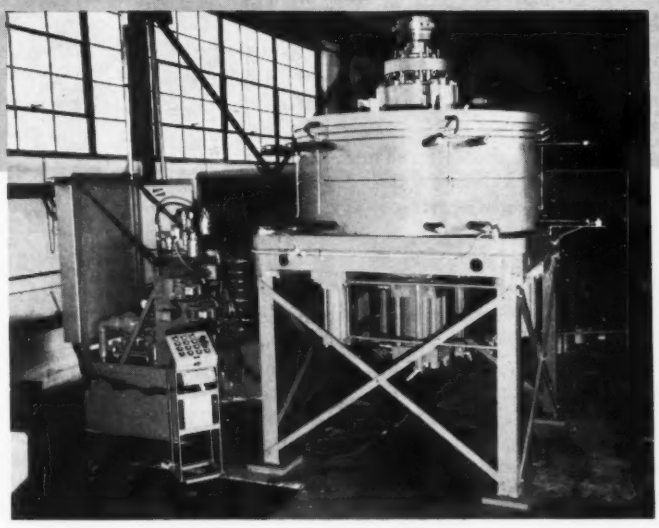

STATION #6 EXPAND CABINET TO SIZE~
STATION #7~ BLANK REAR RECESS OPENING & PIERCE ALL HOLES IN CABINET BACK INCLUDING MT'G. HOLES FOR DETACHABLE BACK PANELS & DETACHABLE BACK COMP. ALL MODELS
STATION #5~ 90° TIP UP UNIT~
STATION #8~ PIERCE & EXTRUDE OPENING FOR BOWL & ALL HOLES IN BOWL RECESSED AREA, BLANK & FORM ACESS OPENING & PIERCE ALL HOLES IN ACCESS OPENING AREA SELECTIVE
STATION #9~ BLANK BACK COMPLETE & CURL NECK ON BOWL & RESTRIKE BOWL ALL OVER SELECTIVE
CUSTOMER FURNISHED CONVEYOR
OPERATOR AND MASTER MODEL SELECTOR CONTROL STATION~



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CUSTOM ENGINEERED EXPANDERS, FORMING AND FABRICATING EQUIPMENT FOR INDUSTRY

The current picture in white di

summarizing the opinions of leading steel producers and

The white direct-on program for porcelain enameling has captured the interest and imagination of the enameling industry to a greater extent than any other current development.

In order to give our readers the benefit of opinions from leaders in the steel and frit producing fields, MPM conducted a survey, part of which was represented by uniform questions. This feature contains the summary of the results, and will serve to bring our readers up-to-date on this subject until such time as additional production plants have direct-on processes in operation which can be investigated at the plant sites and detailed editorially.

It is not the intent of MPM editors to promote or discourage the direct-on development, but, instead, to report qualified opinions. The following represent some of the questions asked of steel and frit producers and typical answers.

Question — Some cold rolled steels may be satisfactory in this new process—but can one make the overall statement that cold rolled steel in general will take direct-on?

Answers to this question ranged from "No!" and "No, definitely not," to statements such as the following:

Not all sources are satisfactory. Sources must be approved by adequate testing of samples. Terminology should be "cold rolled rimmed steel."

Some cold rolled steels can be enameled with the direct-on process, while it has been found that other cold rolled steels cannot be enameled satisfactorily. So far, the trial and error basis has been used.

A frit manufacturer executive says, "Some cold rolled steels have been found to work satisfactorily for direct-on with several different treatments, but different heats have exhibited some variations. So, in general, if you are referring to using the white as direct-on, there is no process at the present time consistent from lot to lot (even from one manufacturer's steel) that gives low enough production results without defects . . . *to answer your question positively.* The only exception to this, which has made all cold rolled steels workable for direct-on, is by first having the surface prepared by running the parts, after they are fabricated, through a decarburizing furnace so that the surface has been decarburized. The decarburizing process has worked consistently on cold rolled steel for a number of years.

A development engineer states, "It is our opinion that regular cold rolled steel, enameled by conventional methods, will not be satisfactory for large scale direct-on work. Whether enamelers will be able to specialty-process cold rolled steel to achieve an economical direct-on process has yet to be determined in large scale production."

Question — Is anyone using other than titanium white enamel with a direct-on process?

The answers to this question would indicate that, to date, the enamels that have been used are of the titanium type, although the responses would indicate that other types of frit are being tried.

Another answer referred to a process used before World War II which did not include a titanium frit. This process has not been pushed commercially since, because of the non-uniformity of steel, and because, with white, the application weight is considerably thinner with titanium frits.

Practically all work on colors for direct-on have been on an experimental basis.

There has not been a particular problem for acid and alkali resistance except in home laundries with some of the low temperatures. The processes used so far have been too new to know anything about their weather resistance.

One frit supplier indicates that while, to the best of his knowledge, the direct-on process has been used with titanium frits only, there would be no reason why zirconium or even antimony frits could not be used if, for instance, there were reason to use these frits for colors other than white.

Question — Is there anyone using direct-on for producing anything but a single item on a production basis?

It is common knowledge, of course, that for a number of years some of the leading appliance manufacturers have applied white direct-on to premium steels for range tops and other parts on a production basis. The only report (see July, 1959 issue of MPM) of 100 per cent plant production using special processing procedures and cold rolled steel is represented by a contract plant specializing in lighting reflectors.

There were references to the use of direct-on by Westinghouse for range tops. This appliance manufacturer has had 12 years experience in using a direct-on process employing premium steel.

Question — Are colors being run in a direct-on process on a production basis?

ite direct-on porcelain enameling

ucers and frit manufacturers based on an MPM survey

Answers would indicate that there is little general knowledge on this question, but at least one report says that a producer of home laundry equipment is using direct-on colors in production. It is indicated that the type of color used may be more critical for this application than for standard two-coat enameling.

Question — How about acid resistance, alkali resistance, and weather resistance?

While several responses indicated lack of sufficient data to support answers, there are opinions that there should be no physical deterioration due to the elimination of a ground coat, but it is suggested that these points should be carefully checked for each material, due to the fact that some enamels will not work satisfactorily without a ground coat. An opinion is also expressed that there should be no basic reason for difference between the characteristics of a suitable enamel, whether used for one or two coat application.

One word of caution always presents itself in this connection, and that is the factor of continuity of finish which, of course, would relate itself to weather resistance. For years, both frit manufacturers and enamelers have been cautious about recommending any single coat finish for outdoor use (signs, architectural, etc.) because of the great difficulty of assuring 100 per cent metal coverage with any thin, single coat application.

Question — What about cost savings as compared to parts run in ground coat and one coat white?

As might be expected, there is a shortage of definite data to get any general answer to this question. At least one plant has reported a direct manufacturing cost saving with one coat direct-on.

One authority places the greatest importance of saving, not on application or material and labor cost, but on savings in handling and packaging and shipping of the finished parts.

One engineer pointed out that, if cold rolled can be used instead of premium steel, such as vitreous enameling stock, there can be, based on gauge, etc., a differential of approximately $10 per ton. He points out, however, that, if after special pickling, special handling, and pre-firing has to be done, then a lot of the saving disappears in this process, "especially at the present time where defects coming through from the steel and the result of special treatments and pre-firing increases the cost by the additional number of operations."

Other reports indicate that the interest in direct-on application has been greater in relation to thickness of coating, characteristics of the final product, etc., than in a dollars and cents comparison at this point, although it is obvious that all plants will be interested in the latter if a direct-on process is put in production.

A Number of Summary Comments are of interest, which are not directly related to specific questions.

One steel producer has this to say: "There does not seem to be any one direct-on process. Our experience indicates that many companies are developing processes, frits, and base metals for direct-on work, with each one having its own peculiarities. Therefore, it is entirely possible that there will not be any one answer to the questions you pose."

Another steel producer reports the development of a new enameling steel which has been direct-on coated by various pre-treatment processes.

A third steel producer has this to say: "It has been our feeling that, regardless of the potentials of the surface treatment processes, there will be demand for special one coat enameling sheets more nearly competitive in price than titanium bearing steel, and one which will not require extensive revisions in the user's equipment and processing methods."

This producer reports that such a special sheet has passed the laboratory development stage and limited plant trials. Production facilities are not as yet complete, but the opinion expressed is that within the near future, this product will be available for extensive plant trials and later marketing.

As can be seen from these reports and opinions, the direct-on process for porcelain enameling is getting close attention by steel producers, frit manufacturers, and by enameling plant operators. Since the early days of intensive work at Westinghouse, Roper, and other appliance plants, progress has been slow, as might be expected of any process which would tend to revolutionize age-old products and processing techniques.

Regardless of the desire to achieve the ultimate in direct-on applications, it can be said that everyone concerned is proceeding with the greatest caution.

Reports would also indicate that work will continue in the steel and frit company laboratories and in the pilot plants and production plants of manufacturers, but that, in the meantime, the biggest tonnage of porcelain enameled steel products will continue to get the standard ground and cover coat application.

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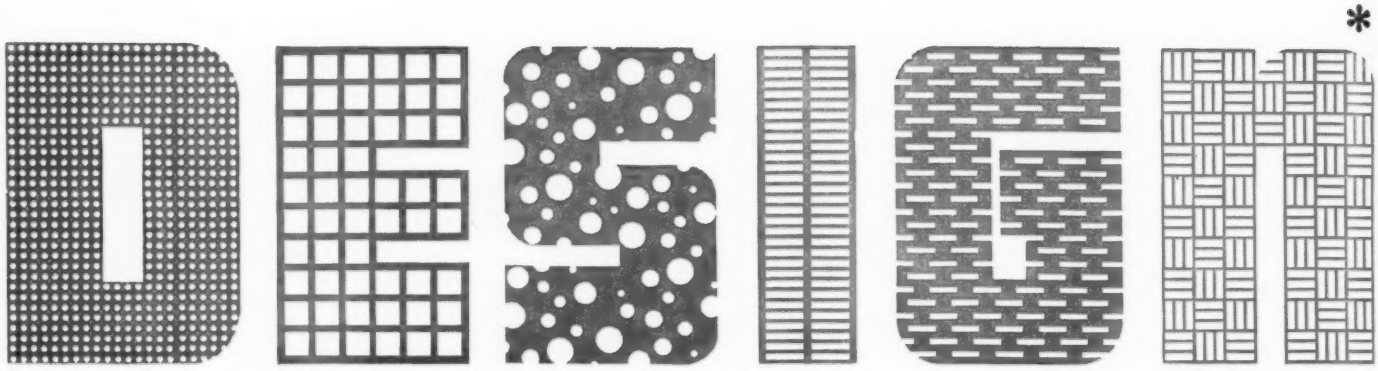

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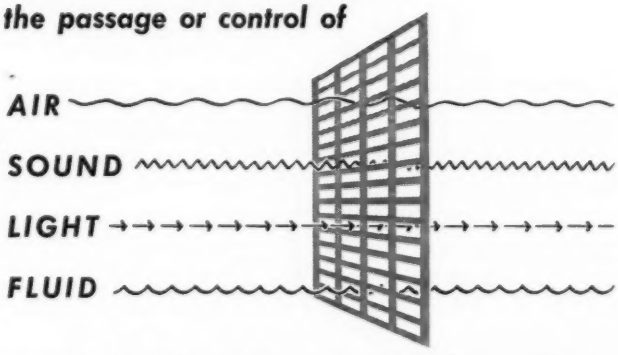

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Processing metal tops at All-Steel Equipment

All-Steel double-pedestal desks fitted with arched legs, showing their appearance from the rear. Edge trim is applied to the desk tops in one continuous, all-around piece. The tops are of honeycomb sandwich construction.

honeycomb core provides high strength in relation to weight, and offers cost savings as well

MPM DESIGN FEATURE

All-Steel Equipment, Inc., Aurora, Ill., manufactures a complete line of steel desks and other steel furniture well suited to modern business. Desks made include those with arched legs or pontoon bases. Various types are produced, including executive, secretarial, salesmen's, billing machine, calculating machine, and conference desks. Other furniture pieces requiring tops are various forms of tables made by the company, including conference tables.

Tops produced for the various desks and tables are modern in design, light in weight in reference to their thickness dimension, and exceedingly strong. They incorporate a honeycomb core, rigidly bonded with adhesive between top and bottom steel wrapper sheets. These wrapper sheets are preliminarily press-worked, and provided with edges turned at 90 degrees all around. Each of the sheets thus presents a box or pan-type appearance before assembly. One of them is made smaller in its width dimension by approximately twice the thickness of material used. Therefore, one will slide inside the other, the two going together in the general manner of a huge pill box.

On some of these tops, the two steel wrapper sheets plus the honeycomb constitutes the entire assembly, except for application of special anodized aluminum edge trim, and a resilient molding subsequently applied to the trim. On other of the tops, however, a sheet of linoleum or plastic is bonded to the steel wrapper sheet, to form the upper surface, before the aluminum edge trim and molding is applied.

High strength in relation to weight

For its weight, honeycomb is one of the strongest materials made. Honeycomb used in these desk tops is a kraft structure, impregnated with resin of phenolic type. It is coated with adhesive on each side, and sandwiched between the steel wrapper sheets mentioned. The favorable strength-weight ratio of honeycomb core material was first fully appreciated in connection with its development and use in aircraft, where weight saved was considered sufficient to justify additional expense in its manufacture.

The original high cost of honeycomb has now been greatly reduced, due to development of modern production manufacturing methods for such material. Some makers furnish it to various specifications. In fact, growth of the use of such material reached the point some time ago where paper manufacturers developed and offered a complete line of standard types, sizes and grades of honeycomb core material. Aircraft firms, logically enough, have also interested themselves in its manufacture.

Two types of honeycomb

According to Paul Daley, plant engineer at All-Steel Equipment, two standard types and styles of honeycomb are used in this plant. One of these is style 60-20, type 30 and 40. This is made of a 60-pound kraft paper, with 20 per cent impregnation. It is expanded 30 to 1 or 40 to 1, resulting in dimensions of 14.4 inches wide by 108 inches long, and 15.3 inches wide by 108 inches long, respectively. The second type of honeycomb used is style 125-35, type 20. This is made from 125-pound kraft paper with 35 per cent impregnation, expanded 20 to 1, which provides a unit 15.3 inches wide by 108 inches long.

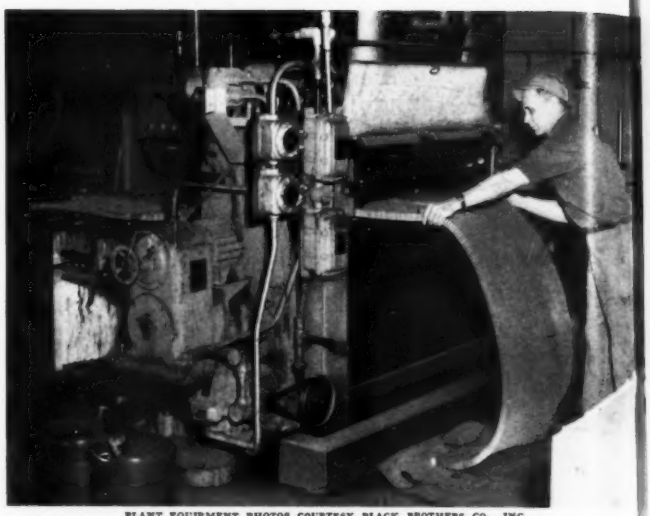
Spreader compensates for solvent evaporation

A rubber-based contact-type adhesive

is applied to both sides of the honeycomb at the beginning of the desk top production line. Both sides are spread simultaneously on a 50-inch wide hooded glue spreader. The spreader is provided with a variable-speed drive and with explosion-proof electrical equipment throughout. A circulating pump is employed, which keeps an ample supply of adhesive in the roll reservoirs at all times, from a supply tank located in the base of the spreader. A small solvent tank is located above the spreader. From this tank, solvent is gradually added to adhesive in the roll reservoirs to replace whatever solvent is being lost through evaporation.

This type of work cannot be done with conventional glue spreaders; the high evaporation rate of solvent from contact adhesives used causes them to become unworkable under ordinary conditions. However, by hooding the glue spreader to retard the evaporation rate of solvent from the adhesive, and by providing solvent drippers which add solvent to the adhesive in the roll crotches at precisely the rate at which it is lost through evaporation, the adhesive is kept constantly in prime working condition.

The variable-speed drive incorporated on the machine may be used to keep it in proper time with a separately-driven conveyor, when that is desired. However, spreaders of this type are sometimes provided with take-off shafts for driving a conveyor. Where this is done, the conveyor keeps in proper time with the spreader automatically, increasing or decreasing its speed according to any change in spreader speed.



Infeed view of modern glue spreader at work spreading both sides of honeycomb core material. The variable-speed device through which the application rolls are driven is in left foreground. A small square tank above the spreader holds solvent for gradual, progressive addition to adhesive reservoirs in the roll crotches. Containers in left foreground hold solvent used for cleaning the machine periodically; also for replenishing feed drip tank at top of spreader.

PLANT EQUIPMENT PHOTOS COURTESY BLACK BROTHERS CO., INC.

Components traverse ovens before combining

The steel wrapper sheets employed, referred to as "pans" by shop men, are not suitable for coating with a roll-type machine, due to their turned edges. Consequently, they have their interior surfaces sprayed with adhesive, then proceed down another conveyor to meet these spread honeycomb cores at the point of assembly. As the components converge toward this assembly point over separate conveyors, both the honeycomb and steel wrapper sheets pass through progressive ovens which are electrically heated by U-shaped resistance heating elements.

The purpose of processing the component parts through ovens is to hasten further evaporation of solvent in the newly-spread adhesive, so it will be brought to the optimum tacky state just before reaching the point of assembly. The "slabs" are then made up by assembling the honeycomb material into the pans or steel wrapper sheets.

The assembled "slabs" or tops are then processed through a rotary press, of the type which incorporates two pairs of steadying rolls, in addition to the pressure rolls. The purpose of these auxiliary rolls is to steady and guide the stock, reducing vibrations which might otherwise develop. Their employment insures a perfectly-straight assembly, whereas under some conditions panels might bow slightly without them. Concerning operation of the "nip rolls," the top roll of each pair moves vertically in adjustment with the upper combining roll, whenever it is raised or lowered.

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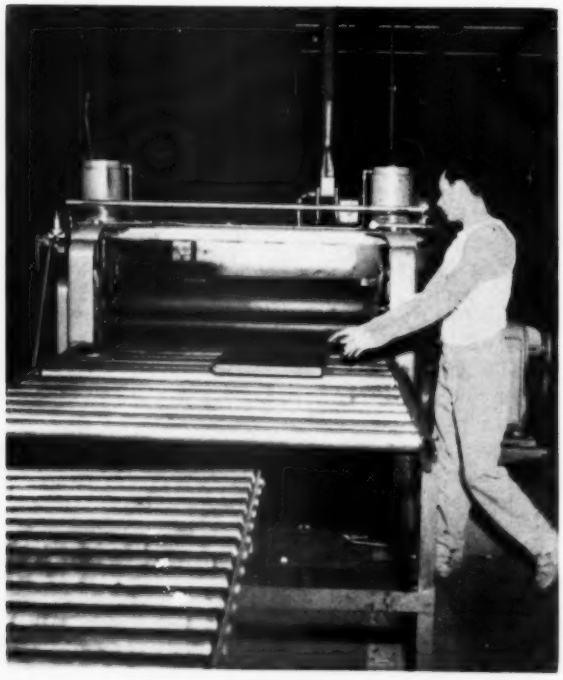
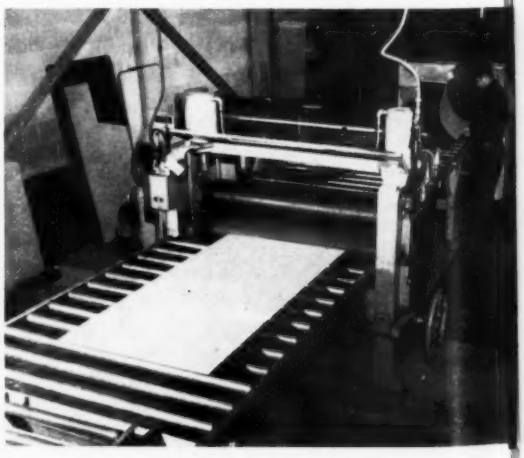


(Left) — This is an outfeed view of a 50-inch rotary press used at approximate midlength of the desk top production line. Necessary pressure is applied to the top combining roll. Two pneumatic pressure cylinders can be seen on top the machine frame, at left and right.



(Right) — Interesting operational view of the rotary press used for combining a final sheet of linoleum or laminated plastic to desk tops. The outfeed side of the pneumatic rotary press is seen in the foreground. In the background is seen the oven through which tops proceed just before reaching press.

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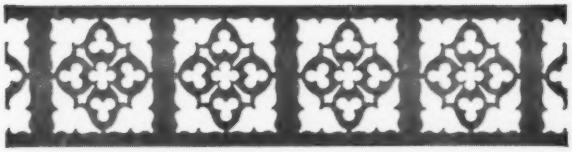

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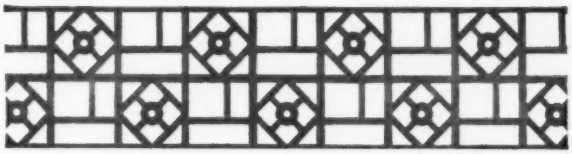

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→ *from Page 56*

Linoleum and laminated plastic sheets applied

A considerable proportion of tops processed in this plant, after passing through the rotary press equipped with steadying rolls, (which combines the honeycomb cores with the steel wrapper sheets) proceed through a second rotary press. Here, after preliminary adhesive application, a sheet of linoleum or laminated plastic is bonded to that steel wrapper sheet which will form the top surface of the desk.

Before reaching this second rotary press, the honeycomb core and the box-type wrapper sheets have assumed such a high degree of rigidity that steadying rolls are not needed. This press, also a pneumatic model, is a 50-inch machine. Tops proceed through a suitable oven just before reaching it.

Outfeed view of a hooded glue spreader equipped with solvent drippers, showing honeycomb core unit coming from the machine onto a conveyor. Using this arrangement, a variable-speed unit is located at the right end; speed of the machine is readily changed through use of a handwheel seen at top of the device.

Both rotary presses are equipped with a special safety control, by means of which they may be stopped instantly, or with which the rolls may even be reversed. Operation of these controls simply requires a touch on either of two horizontal bars, which are located along both sides of the machine at the top.

After these final sheets have been trimmed off properly around the edges, special anodized aluminum trim is attached with sheet metal screws, and resilient molding, which may be either flat or round in style, is applied. Flat molding is generally employed wherever it is desired to place desks side by side, or back to back.

Panels are stamped from coiled stock, scrubbed, straightened, punched, and flat-polished automatically in this automated installation. The phosphate coating unit for treating panels is in right rear of photo.

Automated production line for paint test panels

When a Detroit producer first began the manufacture of paint test panels many years ago, there were no recognized standards for this industry. Now, as a result of an extensive research program by American Society for Testing Materials, independent research laboratories, and the producer, it has been determined that flat polishing is the best method for eliminating variations in metal surfaces in a single heat of steel.

Method D609, "The Preparation of Steel Panels for Testing Paints, Varnishes, Lacquers, and Related Materials," was written in those early years by ASTM Subcommittee VII and the panel producer to build a solid test base for quality.

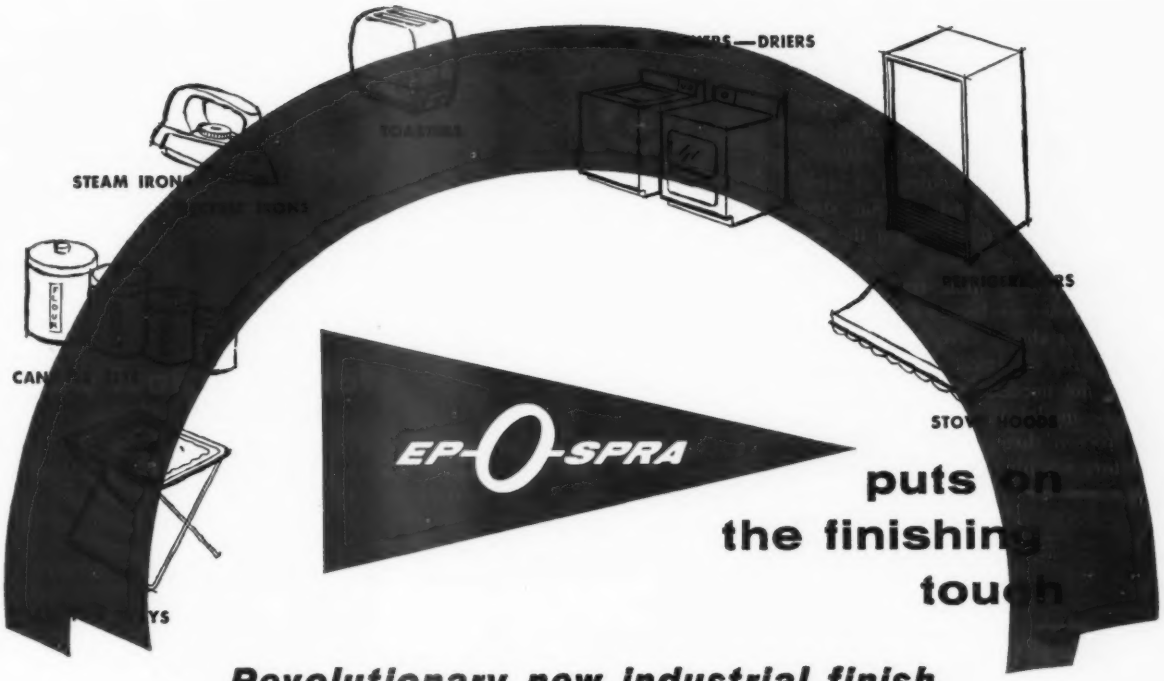
Equipment for the production of paint test panels includes an automatic press for stamping and punching, an organic solvent scrubber, a two-stage flat polisher, a multi-stage automatic conveyorized phosphate coating unit, and a dry-off oven. These units are placed to form a high-speed, automated production line for efficient and uniform preparation.

As the panels emerge from the flat polisher, they are checked for flatness and coating weight. Profilometer readings are taken to hold the surface finish at 15 to 18 micro-inches. Other panels are painted and given salt spray, humidity, conical mandrel, and adhesion tests.

Over 85 varieties of phosphate coatings are in use by industry today. The automatic spray equipment can be controlled for time, temperature, conveyor speed, and dry-off temperature as required by the phosphate coating which is being applied. Untreated panels are available for control purposes.

MPM will procure for you a recently-reduced price list on prepared samples, and a price list on raw steel samples, if you will write on company letterhead to the Special Projects Editor.

Conveyorized automatic phosphate coating unit in Parker's panel production line.



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Improve finish on Steelcase desks

furniture manufacturer uses combination electrostatic and hand spray plus a "balanced" air control system for uniform cleanliness and uniform final finishes

QUALITY AND HIGH SPEED PRODUCTION go hand in hand in the 56,000-square foot desk finishing department of Steelcase, Inc., Grand Rapids, Mich., one of three of the nation's largest manufacturers of high-quality steel office furniture.

The company modernized their finishing department when they built their new desk plant, and switched from hand spray to electrostatic spray painting. They not only increased production with less labor, but improved the quality of the finish.

The finishing department is located on the second floor of the quarter-mile long modern building, which has over 450,000 square feet of factory work area. Two other plants in Grand Rapids, totalling 293,000 square feet of production space, produce Steelcase chairs, filing cabinets, cupboards, bookcases, and related items.

In the desk plant, there are four paint conveyor lines; one electrostatic line for desk tops, a hand spray line for small, custom runs, a dip line for miscellaneous small parts, and the main electrostatic line, which handles the bulk of the painting requirements.

In preparation for painting, parts first go through a 4-stage cleaning and phosphate coating process. After this step, parts go into a dryoff oven and then to finishing.

The main conveyor line, handling about 75 per cent of the paint production, is 1,600 feet in length and operates at 20 fpm. The first electrostatic unit applies a zinc chromate primer as parts loop around the ceiling-mounted disk atomizer, which is 20 inches in diameter. Indexers on the conveyor turn the parts as they go through the electrostatic spray area, and all exterior surfaces of the parts get a uniform coating.

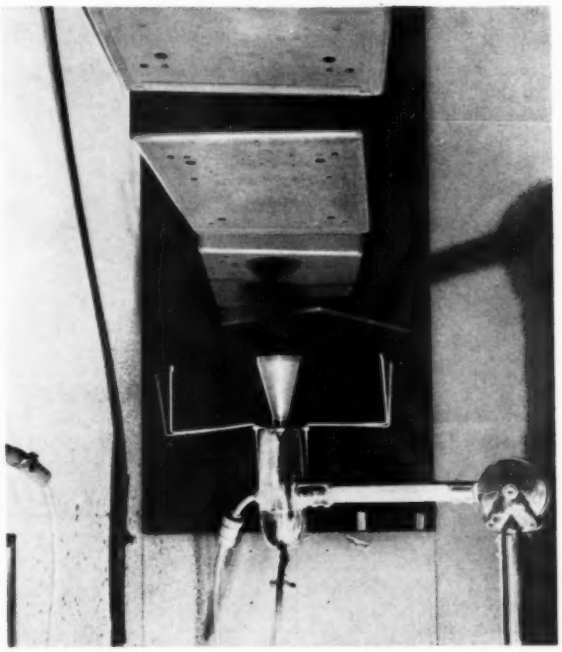
A single bell atomizer is used to paint the under side of the desk pedestal after it has gone through the prime coat booth.

After a 6-minute flash-off, the conveyor line goes through two water-wash booths, where hand sprayers reinforce recessed areas, such as drawer interiors.

Parts then travel into the first of two identical finish booths. These electrostatic units also are ceiling-mounted reciprocating disks, 20 inches in diameter. After a 3-minute flash-off, parts move into the third electrostatic booth, where the final coat is applied.

After a 15-minute bake in radiant heat ovens at 325° F, the desk assemblies are returned by conveyor to the first floor for assembly.

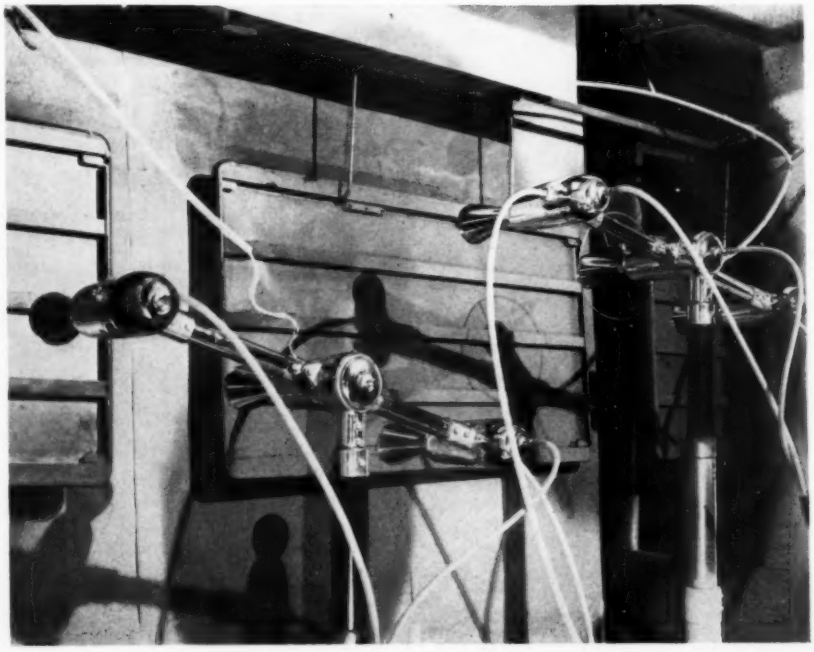
A second, and shorter, electrostatic line handles desk tops. Two triple-head units with four-inch bell atomizers apply the rust-inhibiting zinc chromate primer as the tops move through the electrostatic area. At a second station, finish coat is applied to edges by hand. In this operation, tops are rotated by hand. Painted tops then move to a radiant baking oven. *to Page 93* →



The undersides of desk pedestals are coated with a single unit located just outside the electrostatic prime coat booth. The four-inch bell atomizer is floor-mounted, and is turned on only when certain parts are being painted.

Steelcase desk tops are coated uniformly with two triple-head units as parts are conveyed horizontally through the electrostatic spray painting area.

PHOTOS COURTESY RANSBURG ELECTRO-COATING CORP



News about COATINGS FOR METALS

from Metal & Thermit Corporation

Textured vinyl finishes now produced with sprayed coatings

To get a textured vinyl finish, designers are no longer restricted to laminated types. Two recent M&T developments in *sprayed* vinyl coatings make such appealing finishes especially easy to adopt. Actually, they *widen* the variety of patterns practical for metal panels, cases, housings and other parts.

TWO WAYS TO FINISH

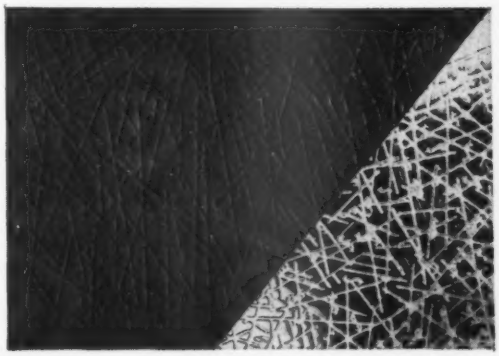
Texture is produced chemically with *Unichrome Coating 6400*. Sprayed on smooth metal sheets and shapes, this coating gives a handsomely textured finish with warmth and leather-like appearance.

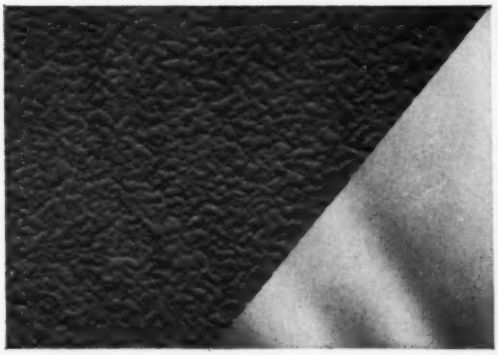
Unichrome Coating 6440 was developed for use on mill-patterned steel or aluminum, now becoming available in an increasing number of extremely attractive patterns. This coating does not alter the profile of the pattern. Whether applied thick or thin, it will faithfully mirror even the most delicate design rolled into the metal.

EXCEPTIONAL DURABILITY

Both of these sprayed vinyl coatings prove up to ten times more wear resistant than the usual baked textured enamel. In a recent evaluation for food shelves, M&T's *Coating 6400* withstood a half million "rubs" from canned goods and still looked new; the shelf with baked enamel showed wear after only 30,000 abrading strokes from the can.

Unichrome Coating 6440, whether sprayed thick or thin, produces an exact replica of the metal pattern beneath it; also contributes warmth, color, and unusual protection.





Unichrome Coating 6400 sprayed on smooth metal develops a texture with the appearance of luxurious grained leather.

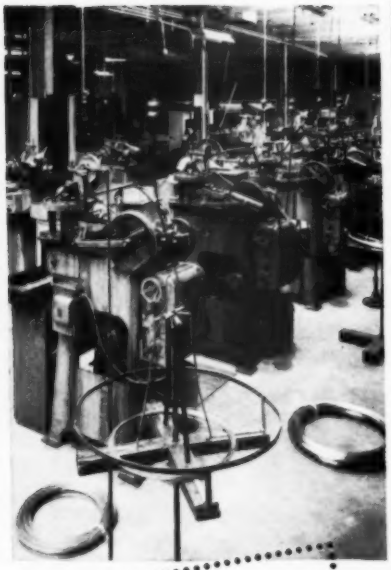
The inherent chemical resistance in these vinyl coatings also protects against stains and corrosion. Their insulating qualities mean warmth to the touch, and also aid in sound-deadening.

As for production benefits, the sprayed finish eliminates the expensive scrap loss incurred with laminates; it also eliminates seam problems at joints.

For more details, write METAL & THERMIT CORPORATION, Rahway, N. J.

coatings and finishes

METAL & THERMIT CORPORATION



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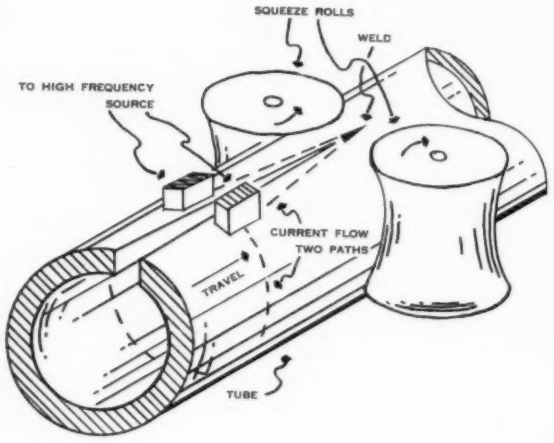
High frequency resistance welding

special high speed equipment offered as a boon to manufacturers of metal products



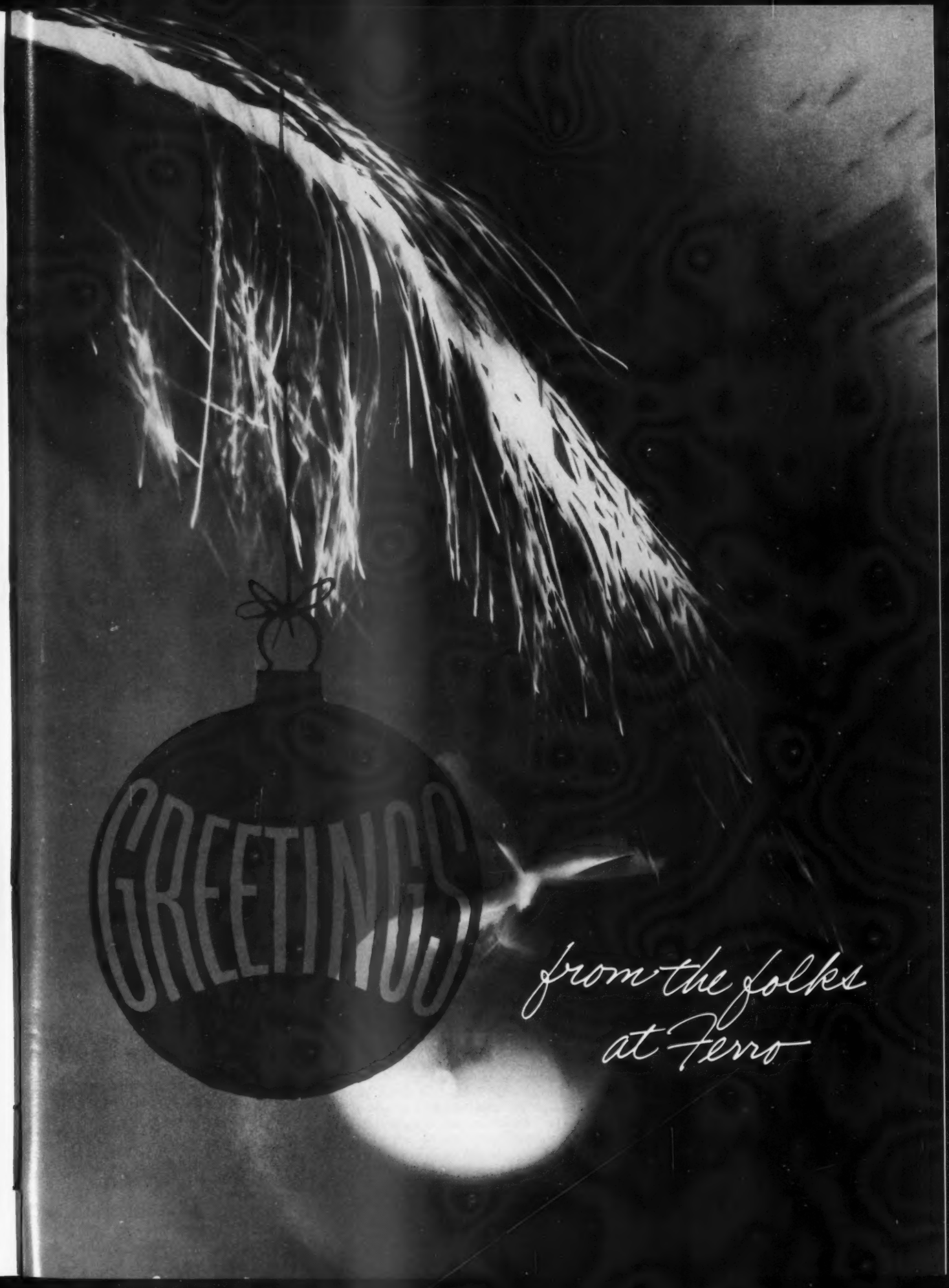
Sketch showing path of current along edge of open seam to point of "V," or weld, and back along other side of seam.

A NOVEL APPLICATION of high frequency resistance welding now makes it possible to forge-weld ferrous and non-ferrous metals for tubing, pipe, and strip metal applications at speeds never before thought possible. This process is currently finding application with manufacturers of metal products.

The welder differs in several ways from conventional resistance seam welding utilizing 60 cps current. In this method, the current is brought into the metal by means of sliding contacts, one on each side of the open seam. In the case of tubing, the metal is formed in a standard forming mill, and then the open seam is kept in a "V" form as it approaches the weld point.

A specially-designed high frequency generator supplies the power which is introduced into the metal at 450,000 cps. Current at this frequency is not dissipated around the entire tube as with low frequency resistance welding, but follows the low inductance path. Hence, current flows from one contact along the edge of the metal of the open seam to the point of the "V" and returns to the other contact along the other side of the open seam. Since each edge of the open

A standard forming mill which has been equipped with a high frequency welder. At left is the high frequency generator and transformer. Input transformer and welding head can be seen in center. Control panel is at right.


GREETINGS
from the folks
at Ferro

seam acts as a return conductor for the other, the heat is concentrated on the edges of the metal being welded. The metal on these abutting surfaces reaches welding temperature and a forged weld is accomplished by rolls which squeeze the heated metal together at the base of the "V."

Equipment welds ferrous and non-ferrous metals

Two strips of metal can be welded together by the same process. This is important when it is considered that the equipment can weld metals of different characteristics. An example of the economy that can be effected by this method is in the manufacture of band saws, which of necessity must utilize high speed steel to insure the life of the saw teeth.

Utilizing high frequency resistance heating, the small section of the saw blade which carries the teeth of the saw, utilizing high speed steel costing $3.80 per pound, can be welded to the body of the saw made of carbon steel and costing one-tenth as much. In accomplishing this forged weld of high speed and carbon steel, a small bead will of necessity occur, but this can be scarfed and an excellent saw results.

Another example of the use of this method is the welding of copper to steel for use in commutators. Since ferrous and non-ferrous metals can be welded interchangeably with this equipment, a manufacturer has a very flexible tool, which can be adapted for several phases of his operation as needed.

In the past three years, more and more users of tubing and odd-shaped forms have installed the special welder to fabricate both ferrous and non-ferrous metals used in the manufacture of their products. By installing their own forming mills, companies are eliminating the necessity of large stock piles. Strip metal in coils of two or three thousand feet, 24 inches wide, is slit to desired widths and formed and welded as desired.

Ferrous and non-ferrous metal ranging in thickness from 0.004 to $\frac{3}{8}$ inches may be welded at speeds up to 1,000 feet a minute. The welding equipment can be adapted to continuous welding of large or small diameter cylinders. The diameter is dependant on the ability of the forming mill to deliver the metal to the welding head. Another adaptation is available for welding finite length metal up to $\frac{1}{2}$ inch in thickness.

For additional information, write to Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

More about direct-on enameling

AT THE RECENT Porcelain Enamel Institute Forum at Columbus, Ohio, seven papers were presented during a symposium on the direct-on process for porcelain enameling.

Steel company reports

In a paper, "Special sheets for one coat enameling," by M. B. Gibbs, Inland Steel Company, there was a review of the use of titanium-bearing steel for this work. This is the process that has been used for some fifteen years by Westinghouse at Mansfield, and by others.

Gibbs said, "This sheet permits the application of cover coat enamels directly to the steel by slight revisions in processing, primarily through a heavier than normal deposition of nickel." Gibbs pointed out that resistance to distortion at conventional enameling temperatures is greatly improved, leading to a possible reduction in gauge of titanium bearing steel, as compared to conventional enameling iron. "However," he said, "mill production costs are quite high and, as a result, there is a premium in the base price."

It is Inland's thinking that with increased use of one coat systems, there will be need for a special sheet more competitive in cost than the titanium-bearing steel, and one that will not require major changes in the user's equipment and processing. Gibbs reported that such a sheet, called Inland "One-Cote," has been developed and undergone laboratory and limited plant trials. "Production facilities," he said, "have not as yet been completed, but it is believed that within the near future, material will be available for extensive plant trials and eventual marketing."

R. L. Myers, Armco Steel Corporation, in a paper, "Base metals for one coat porcelain enameling," reported on Armco's work on the problem. He said that with either conventional enameling sheets or cold rolled, both fish scaling and boiling are a hazard with a one-coat process and that the workability range, in general, is narrow for consistently satisfactory results.

Myers reported that special one-coat steels, such as Armco's "Univit," which have been in limited use to date, are free from enamel fish scaling and boiling. The most recent developments in base metals for one-coat enameling are in the direction of combining the advantages of lowered cost and improved enamelability, he said.

D. J. Blickwede, Bethlehem Steel, introduced a new low carbon enameling steel. The steel has a carbon content of .003 per cent, can be standard two-coated as well as one-coated, and its drawability is at least equal to that of enameling iron, according to Blickwede. An important point is that the steel has an exceptionally high sag resistance.

Ferro direct-on process

E. L. Nobles, Ferro Corporation, discussed a direct-on pickle process. According to Nobles, one of the main requirements for adherence is the removal of a minimum amount of metal surface, often related to the pickle-lag layer. "To be assured of maintaining adherence on all of the variety of steels," he reported, "approximately 1.5 gms/sq. ft. of metal must be removed by sandblasting, acid solution, or other means.

"For good enamel surface characteristics, free of reaction defects, a proper balance of metal etch and nickel deposition must be achieved," Nobles stated. The Ferro process, he said, is aimed at fulfilling requirements for a practical pickle cycle, re-emphasizing that the process is designed to handle a variety of steel sources. Very briefly, this pickle process consists of a conventional alkaline cleaning cycle, a 1200° F. burnoff, a minimum phosphoric acid treatment, and a reduction-type nickel flash.

The Ray-Davis direct-on process

A report prepared by Shipp C. Davis, Daco Corporation, and John J. McCallion, Chas. Pfizer & Co., Inc., contained details of a citric acid pickling process which has been under test for some time *(See announcement October, 1959 issue of* MPM*)*.

It was pointed out that citric acid and its ammonium salt have been used in the past to remove rust and scale from steel, especially stainless surfaces. Experiments were made to try to apply a cover-coat enamel directly to test panels of steel pickled in a citric acid solution. These men reported that the panels developed bond that was equal to that normally obtained with a blue ground coat.

Laboratory research with the citric acid pickle showed definite commercial possibilities, so this was followed by a pilot-plant run in a commercial plant. Recently a full scale commercial run was made, using the process, and the results were reported as excellent.

The basic change in the Ray-Davis process, as compared to conventional operations, is the substitution of a citric acid pickle for the sulphuric acid pickle. It is recommended that, for best results with this process, a minimum nickel deposition of 0.05 gms per sq. ft. is necessary. The iron removed from the surface of steel by the pickle ranges from two to four grams per square foot. Enamel stock steels will be etched more slowly than cold rolled steels.

A paper on plant production by J. C. Swartz, Westinghouse, and T. Stalter, Pemco, and another by R. L. Hadley, General Electric, will be reported in a later issue.

look ahead with LEAD

14,000 Aluminum Extrusions are lead porcelain enameled to keep ceiling maintenance costs down in this famous new Virginia tunnel.

Leaded Porcelain Enamel Saves on Tunnel Overhead!

New Application: The new Hampton Roads Tunnel, world's longest trench-type tunnel, features a ceiling of extruded aluminum panels. *All* 14,000 of them are lead porcelain enameled to (quoting from the dedication program) . . . "assure low, long-term maintenance costs."

Lead compounds are used on the wall tiles, too—to increase brilliance, luster and smoothness of the glaze. And make it long-lasting!

Lead offers many advantages in porcelain enamels. It reduces the firing temperature at which the enamel can be applied to the base metal. Particularly important for metals with a low melting point like aluminum.

And lead increases the "chip-resistance" of enamels. Lets you *punch, drill, shear* or *saw* them with little or no fragmentation.

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THE finish LINE

AN EDITORIAL REVIEW . . . of the Finish Line pages for 1959 shows SERVICE to be the chief problem considered. Following are a few excerpts from these editorials. There will be more on the subject of "poor" service, but also editorial features on what some companies are doing to give "good" service.

The forecast symposium — January 1959 MPM

As is customary, MPM presents a summation of forecasts by those whose business it is to study the progress of the appliance and fabricated metal products field.

GAMA says that the gas appliance and equipment manufacturing industry looks for a 4.3-per cent increase in unit sales in 1959.

The research experts on home laundry equipment state, through AHLMA, that if the present growth trend continues, the industry will have an "easy time selling 5,100,000 units in 1959."

Electric appliance sales (major appliances, electric housewares, fans and commercial electric appliances) will be up 7 per cent in 1959 over 1958, according to NEMA.

The electrical manufacturing industry as a whole expects to produce $21 billion worth of goods in 1959.

Chicken feed and metal products — February MPM

An excerpt from a guest editorial by Bennett Chapple which drew requests for reprint permission from some of the country's leading manufacturers.

Simply doing a day's work for a day's pay is not enough. It is important, I believe to realize the role we are playing in the scheme of things, no matter how small. It doesn't matter if a man is working in the selling end or in production. . . People, too often, hesitate to talk about their work because they think it will bore others. But if they have something interesting to say, they will never bore people. Enthusiasm creates that interest.

NARDA school of service management — March MPM

An example of specific results credited to last year's schools — William Galbreath, House of Television, Houston, Texas, attended the NARDA Management School in Washington and his son attended the Service School in Chicago.

Practical results: this dealer almost doubled profit in 1958 over '57 on $31,000 *less* gross sales. He instituted sales budgeting and improved records. . . .

SERVICE . . . something to hope for — July MPM

In this and practically all recent issues of MPM, there have been reports of the increased attention being given the question of customer service at the manufacturer level. The general up-grading of service personnel and the laying of more definite plans for field service may all be considered steps in the right direction.

Regardless of the position of any reader who takes time for this "Finish Line' editorial, it is a safe bet that there has been some service "incident" in his or her home during recent months which might reflect on the manufacturer.

SERVICE . . . *STILL* something to hope for — August MPM

It is the purpose of these editorials to further emphasize the very serious situation with respect to appliance service at the user level.

Certainly there will be no attempt to minimize the difficulties involved in correcting an unhealthy situation.

As we told members of AHLMA at their recent national meeting, if we knew the final answer to smoothing out this service problem, we would have a quick answer to our first million dollars.

The problem is here, and until we do have better answers than are currently available, it would appear that the future of the appliance business is in a hazardous position.

Preventive service benefits — September MPM

Excerpt from a guest editorial by Arthur E. Meling, Manager of Technical Services, Unitary Equipment Division, Carrier Corporation.

The most obvious benefit of a preventive service program to the *dealer* is that it provides him with a year-round source of income to carry him through the "off season" of his business. It also permits him to employ full time service personnel, and adequately train them. It aids in selling products and keeping the customer's confidence in that product. It keeps the dealer favorably in the customer's mind. . .

It should also be of benefit to a *manufacturer* to encourage dealers to embark upon a preventive maintenance service policy program. Any manufacturer undertaking such a service policy program should instruct its dealers that service must be sold as aggressively as any product, and sales people should be thoroughly acquainted with its advantages. Only then does it become a two-edged sword that will make a profit by itself and will sharpen the sales effort for the company's products.

I challenge you to publish — October MPM

Excerpts from a letter from S. H. Isaacs, a Cincinnati manufacturers' representative.

One of these days some manufacturers are going to come up with a tremendous new concept and, like all new things, this will be as old as time. They will feature sturdy, reliable, easily-serviceable products. Suddenly they will capture that element of the buying public that at least attempts to purchase on a logical basis and takes into consideration not only the price and flash features, but also the real value of the product in long term service. These manufacturers may even discover to their total astonishment that this segment of the buying public is large in number and may even be dominant in its total purchasing power.

The potent word — service — November MPM

Here is part of a comment by S. J. Randall, president and managing director of General Steel Wares Limited, Canada's largest independent appliance and housewares manufacturer with annual sales volume over $36 million.

When all else is equal, the only advantage any salesman has left is service — service from him, service from his company, service from management. In this business we talk about prices; we are very competitive, very competitive. I say that in our industry the biggest thing we have to offer is service. That should be the number one key. . . When terms, prices, quality, performance are approximately equal, service is the only deciding factor.

A most happy holiday season to all MPM readers.

Dana Chase

EDITOR AND PUBLISHER

Castings by ACME ALUMINUM FOUNDRY CO., Chicago

. . . here's your ANSWER!

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Even the finest organic or ceramic coatings are not satisfactory unless the base metal is CHEMICALLY CLEAN. MACCO No. 19 is a brilliant, new, streamlined 1957 chemical development, *ideal for use in either spray type washer or tank.* This highly efficient cleaner will thoroughly CLEAN and BRIGHTEN aluminum and die cast metal WITHOUT ATTACK. *Just One Operation—No Smut—No Acid Dip.*

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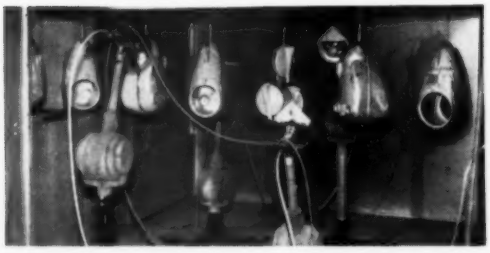
NO. 2 PROCESS ELECTROSTATIC SPRAY PAINTING

in finishing

COMPACT VACUUM CLEANERS

Interstate Engineering Corporation in Anaheim, Calif. switched from hand spray to Ransburg automatic Electro-Spray in the painting of their quality line of home renovating products: The COMPACT vacuum cleaner . . . the POLISH-AIRE floor polisher . . . and MAGIC DISC carpet and rug sweeper.

RESULTS? Quality of the painting improved, for with former hand spray, rejects used to run as high as 10%. That's because of Interstate's high quality standards. Now, with Electro-Spray, rejects are cut to less than 2%! This alone would have justified the change, but Ransburg Electro-Spray also provides substantial labor and material savings. One operator now does the work of two. And, with the former method, Interstate was painting only 28 sets of parts per gallon of paint. Now, they get 57 sets of parts per gallon. Think of what 50% savings would mean in YOUR finishing department.



Vacuum cleaner parts are painted with wrinkle enamel as they pass through the electrostatic spray painting area in the finishing department at Interstate Engineering Corp. Unpainted parts, entering from the right, are coated uniformly by the two Ransburg atomizing bells on either side of the line.

NO REASON WHY YOU CAN'T DO IT, TOO!

Let us show YOU and test-prove the advantages of automatic electrostatic spray painting on YOUR products in our complete laboratories. Call or write for our No. 2 Process brochure which shows a variety of automatic painting installations on a wide variety of products in both large and small plants. Or, if your production doesn't justify automatic painting, let us tell you about the new No. 2 Process Electrostatic Hand Gun which can be used in either conveyorized, or non-conveyorized painting.

RANSBURG

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Electro-Coating Corp.

Box-23122, Indianapolis 23, Indiana

INDUSTRY MEETINGS

HEATING & AIR CONDITIONING

National Warm Air Heating & Air Conditioning Association's Annual Meeting, Chase Park-Plaza Hotel, St. Louis, Mo., December 1-4, 1959.

ENAMELERS

Midwest Enamelers Club Meeting, Sheraton Towers Hotel, Chicago, December 5, 1959.

NARDA CONVENTION

National Appliance and Radio-TV Dealers Association's Convention, Merchandise Mart, Chicago, January 3, 1960, and Conrad Hilton Hotel, Chicago, January 4-5, 1960.

HOME FURNISHINGS

International Home Furnishings Market, The Merchandise Mart, Chicago, January 4-15, 1960.

ELECTRICAL CONFERENCE

The Fourth Annual "Live Better Electrically" Womens' Conference, Edgewater Beach Hotel, Chicago, January 7-9, 1960.

HOUSEWARES

National Housewares Manufacturers Association's Exhibit, Navy Pier and Drill Hall, Chicago, January 11-15, 1960.

METALLURGY

The Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineers' Conference, Del Prado Hotel, Chicago, January 20, 1960.

MAINTENANCE & ENGINEERING

Plant Maintenance & Engineering Show, Convention Hall, Philadelphia, January 25-28, 1960.

Reference Catalog For Industrial Ovens

A fully categorized reference catalog, with reference tabs for locating applications, provides basic information about laboratory ovens, pilot plant ovens, and small batch-type production ovens. Complete oven information concerning each application is provided in specialized bulletins contained in each section.

The information in each bulletin includes features, specifications, prices, uses, and accessories for the particular oven. The catalog includes illustrations and design breakdowns of the ovens. To obtain a copy of the catalog, write to Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

SEASON'S GREETINGS

May contentment,
good health and an
abundant life be yours
during the coming year.

Chicago Vitreous CORPORATION

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A DIVISION OF THE EAGLE-PICHER COMPANY — SERVING THE NEEDS OF THE INDUSTRY SINCE 1918

Some observations on the effect of automation on cost reduction

by A. S. Karrer • GENERAL ELECTRIC CO.

I HAVE BEEN ASKED to make a few comments on the effect of automation on cost reduction in our enameling operations. I have no startling revelations to make, for our operations are all common, everyday processes you will find in almost any other porcelain enameling shop. Our most automated process is our power-and-free conveyorized pickling system and, in the past, we have had some experience with automatic flow-coating of electric range door and drawer panels. We have also tried our hand at electrostatic spraying of cooktops and backsplashers. I will return to these subjects later in a bit more detail.

Our cost reduction program in the Range Department of the General Electric Co. is constantly active, for we know that the money saved by our determined efforts to reduce labor, material, and overhead costs is actual *profit*. In fact, cost reduction dollars can be the factor which determines whether or not a satisfactory profit has been achieved.

I remember quite a few years ago when a manufacturer boasted in his advertisements that his product was processed "untouched by human hands." That phrase, it seems to me, is a quite simple way of explaining true automation. At this point, I think it hard for an enameler to visualize moving his ware through all the various enameling processes—pickling, ground coat, cover coat, etc.—without using manual material handling processes. The mist begins to clear, though, when one begins to think in terms of one-coat, low temperature enamels direct on steel; each one of these things means cost reductions, and with the increased potential for automation that they offer, their cost reduction powers increase. These are the lines along which we are thinking.

Yes, automation means cost reduction, but I like to think of that as not 100 per cent pure fact. Some operations do not lend themselves to automation without considerable investment in research on materials and equipment, and these costs can very well mean success or failure of an automatic process on a cost-reduction basis. When considering automation, research the project well: (1) Look over your current method of operation — is it really as inefficient as it seems? Sometimes we stand so close to our problems that we fail to recognize them, and if we will just stand back a bit and look the situation over from a different angle, we can see simple ways to save many dollars without automatic equipment which might take several years to amortize. (2) Analyze the product itself—determine whether or not the product design lends itself to automation in the first place and, if it does, determine if its basic design will remain stable for a reasonable time after the amortization period of the automatic equipment has expired and the real cost reduction benefits can be realized.

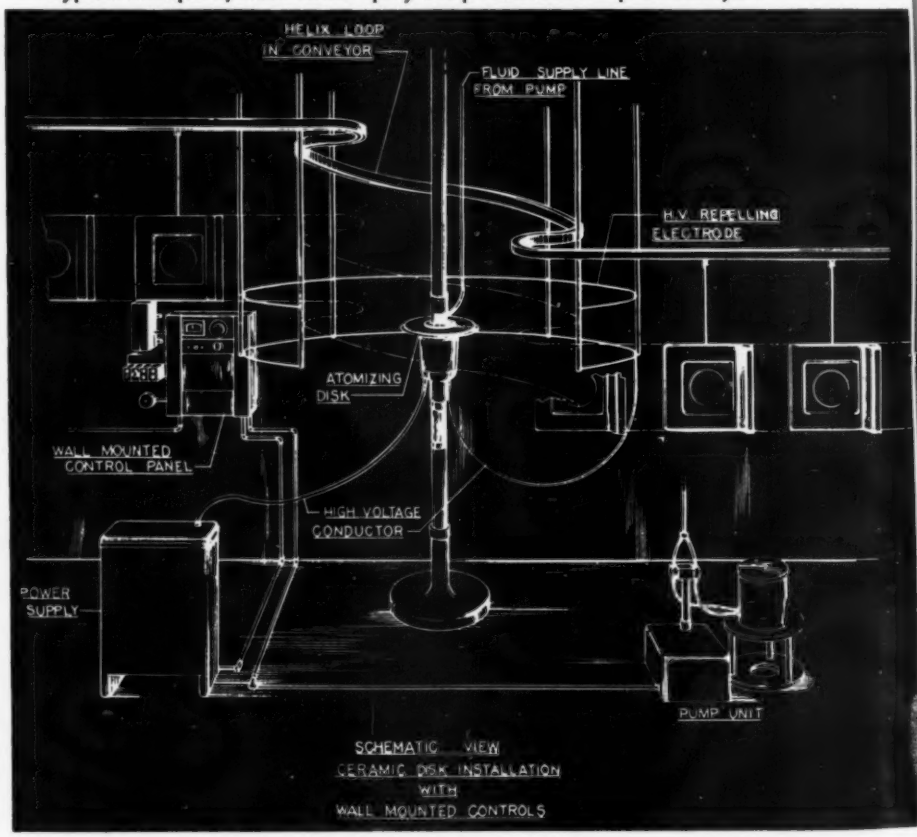
Let me state several of our experiences:

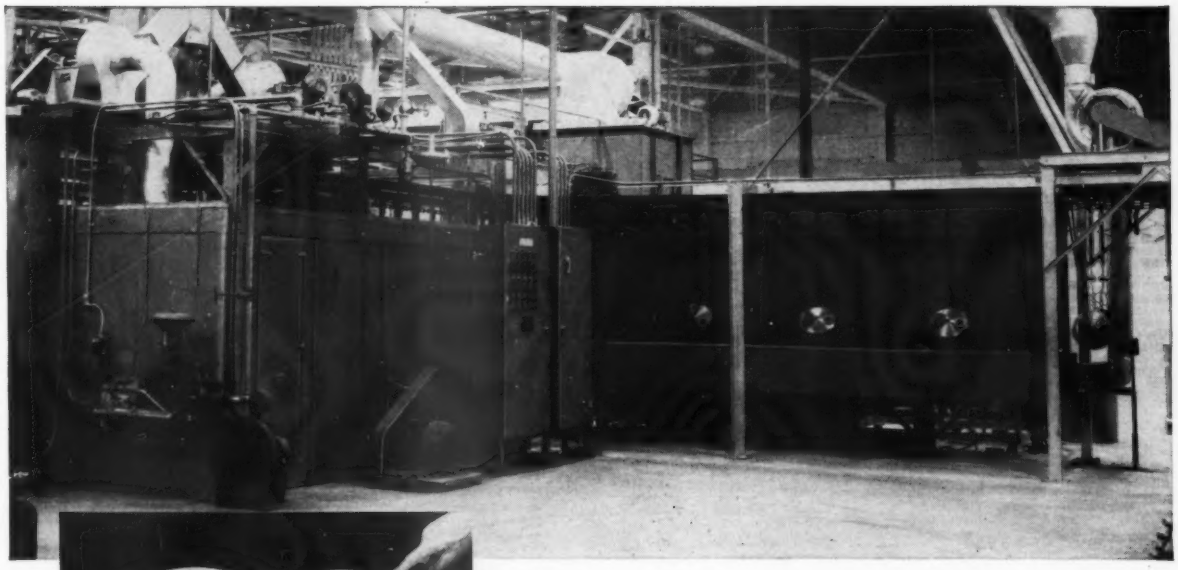
Our pickling system is the most automated process in our enameling facilities. By use of a group of ten different conveyors, our material handling through the pickling process is automatic from the loading stations in the press fabrication area to the ground coat dipping stations. In its basic functions, it saves the labor of approximately 15-20 operators (loaders and material handlers). Actually, its cost-reduction value is decreased by the high cost of maintenance and downtime lost due to equipment failure. Such a system works fine in applications not connected with metal cleaning and pickling such as we experience in the enameling industry.

Several years ago, we installed a semi-automatic system to apply cover-coat enamel to flat panels using a curtain type flow-coater. All preliminary investigations indicated that considerable cost reductions would be possible in both material and labor—even after

to Page 96 →

Typical example of electrostatic spray setup with helix loop in conveyor.





JOB REPORT

PRODUCT:

Stamped steel covers and structural components for high-voltage Westinghouse transformers. Coated with CORVEL cellulosic to provide 12000 volts insulation, a gasketless seal, and a durable, decorative weather proof surface.

PROCESS:

Preheat parts, dip in "fluidized" bed of fine, dry plastic powder, and postheat. Oven temperatures held to plus or minus 5 °F. Licensed fluidized bed process deposits tough, corrosion-resistant coating of uniform thickness on all surfaces, regardless of part configuration.

PRODUCTION:

Uninterrupted production of finish-coated parts from conveyorized installation of preheating ovens, dipping tanks, excess powder blow-off and collection units, and postheating ovens—custom engineered, fabricated and erected by MOCO for economical operation by Westinghouse Electric Corporation.

*Trademark of The Polymer Corporation for finishing materials.

MOCO, the Polymer Corporation and Westinghouse Team-up to Beat the Elements!

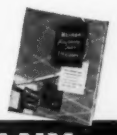
Teaming up to take advantage of the unique new fluidized bed coating process, Michigan Oven Company, The Polymer Corporation and Westinghouse Electric Corporation engineers recently completed target-date installation of a system for applying CORVEL* fusion bond coatings at a modern new Westinghouse manufacturing center.

Designed to apply a protective coating on transformer covers, the new system demanded accurate timing and temperature control of parts during pre-heating and post-heating, complete scavenging of excess powder (for general safety reasons as well as economic ones), and continuous movement of parts in a specified path for uniform dip-coating.

Experienced MOCO design and process engineers provided an integrated system of ducts, blowers, conveyors, and heating and control equipment completely meeting Westinghouse specifications for quantity, quality and cost.

MOCO problem-solvers will welcome the opportunity to team their talents with yours. Write for the name of our representative nearest you.

FREE—Send for your MOCO bulletin showing typical finishing system applications and specifications; no cost or obligation, of course.



MICHIGAN OVEN COMPANY

MOCO

FINISHING EQUIPMENT DEPT.
423 BRAINARD
DETROIT 1, MICHIGAN

Washing Machines • Bonderizing Units • Dry-off Ovens
Dip Tanks • Spray Booths • Flo-coaters • Finishing Ovens • Conveyors

From LUX

Endless Progress in Precision TIMERS

From their first timer down through the latest *slimtrim* model in the 5800 series, each Lux timer has been a keen instrument, with accuracy and reliability guaranteed by the life-testing pattern through which a prototype of each model must pass.

The history of Lux—specialists in the timer field and producers of more than 20 million clocks and timers—has been to combine engineered construction with imaginative styling for continuing customer satisfaction.

Always perceptive and thorough, Lux management today has infused into the company's several departments of design, development, and sales the energy and serious purpose to meet the appliance industry's constant demand for timers of improved design and performance.

Better components mean better washers, dryers, ranges. Whatever your product, if it needs a timer, look to Lux . . . first in fashion . . . infallible in function.

LUX Time
YOUR TIME-REMINDER LINE

LUX . . . first . . . for lasting TIME

THE LUX CLOCK MANUFACTURING COMPANY, INC.

WATERBURY 20, CONNECTICUT

NEMA

→ *from Page 37*

the consumer-based economy for a still better way of life; and the march of science."

In considering changes necessary to NEMA's future success, the Planning

MPM PHOTO

W. C. Wichman, newly-elected vice president of NEMA, *and J. L. Singleton, retiring president.*

Committee found that the Association's "activities were profoundly affected by the increasing competition of other industries," and that NEMA must work closely with its electrical trade allies to "meet the challenge of gas." In addition, he stated, "NEMA must find a way to compete against imports, but at the same time cooperate in world-wide standardization" . . . "and recognize, and successfully deal with, increasingly-powerful government at all levels."

After discussion from the floor, and suggestions for several amendments, the new organization plan was approved by oral vote. Final approval is subject to mail vote by authorized voting representatives but is said to be assured. The new plan will take effect on January 2, 1960.

Medallion home program

The electrical industry's Medallion Home Program — completing its second year next month — will be administered by NEMA during 1960 and future years. Designed to stimulate the construction and sales of new homes, in all price ranges, featuring "full housepower," "light for living" and *electric appliances,* the program has established the first minimum electrical requirements for the American home. The minimum national standards for Bronze Medallion homes require that they be equipped with an electric range and three other major appliances; light for living; and adequate wiring for plenty of "housepower."

New officers and board of governors

N. J. MacDonald of Elizabeth, N. J.,

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★★★★★★★★★★★★

COMING FEATURES

DESIGN

EXCLUSIVE MPM FEATURE (JANUARY) ON AN ALL-NEW REFRIGERATOR

WHAT TO LOOK FOR IN FUTURE APPLIANCE DESIGN

FABRICATION

FABRICATION OF THE ALUMINUM ALLOYS

FABRICATING AT AVONCRAFT DIV., AVONDALE MARINE WAYS, INC.

COST CONTROL FOR A CONTRACT STAMPING PLANT

FINISHING

LOW TEMPERATURE PORCELAIN ENAMELING AT FRIGIDAIRE

PORCELAIN ENAMELING AT AVONCRAFT DIVISION

CENTRALIZED CONTROL FOR A MODERN ORGANIC FINISHING PLANT

MODERNIZED FINISHING AND ASSEMBLY FACILITIES AT ARMSTRONG

GENERAL

ANNUAL APPLIANCE FORECAST (BY LEADING INDUSTRY STATISTICIANS)

ORGANIZED APPLIANCE SERVICE

SPECIAL SECTION — THE COMPLETE BUSINESS, ENGINEERING AND PRODUCTION STORY OF ONE OF THE COUNTRY'S LEADING MULTI-PRODUCT APPLIANCE MANUFACTURERS

COMPLETE DETAILS ON ONE OF THE COUNTRY'S LEADING APPLIANCE SERVICE SETUPS

"RELIABILITY" — THE FUTURE WORD FOR PRODUCT DESIGNERS

SPRAYABLE URETHANE FOAMS

WATER HEATER MANUFACTURING AT HOTSTREAM

VOLUME PRODUCTION OF PORTABLE ROOM HEATERS

THE USE OF PLASTISOLS AT WASTE KING

SPECIAL SECTION (MAY) — THIRD ANNUAL SECTION DEVOTED TO AUTOMATIC MERCHANDISING INDUSTRY (COIN-OPERATED MACHINES)

NEWS

MONTHLY STATISTICAL REVIEW

STAFF EDITORIAL AND PHOTO COVERAGE OF ALL IMPORTANT INDUSTRY MEETINGS

★★★★★★★★★★★★

New sprayable polyurethane foam system

Brine resaturation tank in Wyandotte Chemicals Corporation's South Works, Wyandotte, Mich. This view shows the tank completely coated with urethane foam.

WYANDOTTE CHEMICAL CORP. has announced a new development in spraying rigid urethane foams based on polyethers. Wyandotte's research division has developed a low-cost spray system producing rigid foams which are self-adhering, tack-free in less than five minutes, and having about twice the insulation efficiency of conventional insulating materials, according to the report. The product has been applied with spray equipment supplied by The DeVilbiss Co.

The use of fluorinated hydrocarbons is one of the factors which contributes to the low thermal conductivity of the foams, the report states. The K factor (Btu/sq.ft./hr./in./°F.) of this gas containing foam is about 0.14 for a 2 pound per cubic foot foam as compared to over 0.2 for conventional insulation.

The spray system is based on two components of low viscosity and can be carried out successfully with standard paint spray equipment, except for a special gun.

The two components are metered by the design of the spray gun and pressure alone, and are mixed externally. Wyandotte development men say that extensive in-plant spraying at the company's plant proved the metering to be effective and reproducible. The output of the gun can be varied, but best control is obtained at about 3-5 pounds per minute, giving around 10 to 20 board feet coverage per minute. The density range, it is stated, will be about 2.5 to 3.5 pounds per cubic foot.

The advantages claimed for the system are high thermal insulation efficiency of the foams, ease of application on flat or irregular surfaces, self-adhesion, chemical and weather resistance, low equipment cost, and speed of application.

(Left) — Design of components in new barber chair is discussed by Paidar President Clarence Long Dlouhy, J. Gordon Knapp, and Joseph Palma, Jr. Palma and Knapp designed the chair.

(Lower left) — This trim chair bears no resemblance to the "pot belly stove" of bygone days.

(Below) — Although the main parts are extruded, the entire assembly also includes forged and machined aluminum.

The new look in barber chair design

TRADITIONALLY, barber chairs have been massive, overstuffed objects. Now, Emil J. Paidar Co., Chicago, manufacturer of these chairs and related equipment, has introduced a completely new design.

Among the more important aspects of the chair are its low cost, light weight, and streamlined design. For the first time, aluminum extrusions are used extensively for main components such as the foot rest, platform and arm supports, and other parts. The chair is as much as 150 pounds lighter than conventional barber chairs.

The aluminum is fabricated into components by Bohn Aluminum & Brass Corp., Detroit. Although the main parts are extruded, the entire chair assembly also includes forged and machined aluminum. For instance, the handle which controls tilt and vertical movement is an aluminum rod with a machined grip. Later, the entire handle will be machined as a single piece. The foot rest and platform extrusions have been anodized.

"We think it's appropriate," says Paidar President C. L. Dlouhy, "for our new chair model to be introduced during the year of our company's fiftieth anniversary. As the industry's first major design change in 20 years or more, we believe it represents a definite new trend to give barber equipment a 'here-and-now' look.

"At the same time, by using aluminum and revising our design concepts, we have produced a chair which is as sturdy and dependable as older models, yet weighs half as much. Some models will sell for 10 per cent under comparable conventional models."

Hoctor Named Mfg. Mgr. At Westinghouse Div.

William E. Hoctor has joined the Westinghouse Electric Corp.'s Air Conditioning Div. at Staunton, Va. as manager of manufacturing, according to R. K. Serfass, division manager.

Hoctor was formerly associated with the Motor and Control division of Westinghouse at Buffalo, where he was general foreman. He succeeds *Burr Tupper*, who has become director of works engineering at Westinghouse headquarters in Pittsburgh.

Siegler Sales, Profits Up

Net earnings of the Siegler Corp., Los Angeles, rose to $815,616 for the three months ended Sept. 30, it was announced by John G. Brooks, president. This represents a 53-per cent increase in profits over Siegler net earnings for the similar period a year ago of $533,262. Sales for the period totaled $21,189,245, an 11½-per cent increase over the same period in '58.

Geo. D. Roper Sales Up

Geo. D. Roper Corp. net sales for the 40 weeks ended Oct. 10 were $24,912,-265, compared with net sales of $24,-196,914 in the comparable period a year ago.

Maytag Sales And Earnings Set New Records

Sales and earnings of The Maytag Co. for both the third quarter and the first nine months of 1959 set new records, according to a company report. Net sales for the nine months totaled $93,504,478, compared with $74,520,-168 in the same period last year. Earnings for the nine months were $10,105,-527 compared to $5,982,965 last year.

Sales during the third quarter amounted to $30,785,504, compared to $26,550,005 last year. Third-quarter earnings were $3,448,092 compared to $2,591,975 a year ago.

Propose Bell & Howell, CEC Merger

A proposal to merge Consolidated Electrodynamics Corp. with Bell & Howell Co. has been approved, in principle, by the directors of both companies. It is planned that a detailed merger will be developed and submitted to the directors and shareholders of both companies for approval. Bell & Howell is located in Chicago and Consolidated Electrodynamics in Pasadena, Calif.

Ranney Refrigerator To Expand

Ranney Refrigerator Co., Greenville, Mich., manufacturers of refrigerators and freezers, plans to expand its plant at an estimated cost of $200,000. The firm will add 17,000 square feet to house a new electrostatic paint spray and metal preparation equipment. Ranney estimates that at present it produces five per cent of the total home freezers manufactured in the U.S., and three to four per cent of two-temperature refrigerator-freezer combinations.

Hupp Reports Record Quarter, Announces New Line

Hupp Corp. has reported the best third quarter in the company's history. Sales in the quarter amounted to $17,-155,000, according to Don H. Gearheart, president. In addition, nine months net earnings for the company were double those of the like 1958 period.

Announcement was also made of five new models to Hupp's Perfection line of central residential and commercial air conditioners and heat pumps. The new heat pump line will contain remote heat pumps as well as the two, three, four, and five hp models.

Whirlpool Announces Four Thermoelectric Devices

Whirlpool Corp. has announced the development of four new thermoelectric devices. The devices include a compact water purification apparatus which uses the dual-effect thermoelements simultaneously for evaporating and condensing; a multi-compartment food cabinet for

New Rheem Subsidiary Makes Teaching Machines

Rheem Mfg. Co., New York, has acquired a majority interest in Califone Corp., Los Angeles, manufacturer of record players, sound systems, and related teaching equipment. Califone will be renamed Rheem Califone Corp. and operated as a Rheem subsidiary to develop, manufacture, and sell Rheem's recently announced line of teaching machines for school and industry as well as the Califone line of equipment. Califone was founded in 1946 and employs 150 persons.

Rheem has introduced for field testing several models of teaching machines. The machines are about the size and shape as adding machines or typewriters. They offer visual programs to help instruct individual students, who operate the machines at their own learning rate by mechanical, electro-mechanical, or electronic controls. The electronic machines, which train key punch and adding machine operators, were developed by Solartron-Rheem Ltd., a subsidiary in England owned jointly by Rheem and The Solartron Electronic Group Ltd.

The operator is shown using the Didak psychomotor, an electronic teaching machine designed to teach operation of IBM *key punch machines. This machine was developed by the electronics division of Rheem Mfg. Co., South Gate, Calif., and The Solartron Electronic Group Ltd., England, through a jointly-owned research facility.*

long range aircraft personnel; a Sprengel-type mercury pump suitable for gases and liquids that is operated by an electric current generated directly by otherwise-wasted heat; and a device which utilizes a thermal junction and mercury to operate gas or fluid valves.

According to Whirlpool's William E. Mahaffay, "Materials have been developed which would, should processing and price improve, make revolutionary new electronic devices containing no moving parts available to the public in the near future."

Carrier To Market Electric Resistance Heating Equipment

The Unitary Equipment Div., Carrier Corp., has announced that it will expand its distribution of electric heating products to include two complete lines of electric resistance heating equipment. Russell Gray, vice president and division general manager, said the entry into the resistance heating field was a natural supplement to the company's extensive promotion of the heat pump.

Demand For Space At NHMA Exhibit

The greatest demand for exhibit space in the 20-year history of the National Housewares Manufacturers Assn. has been reported by Dolph Zapfel, secretary of NHMA. A total of 731 exhibitors will show their wares at the 32nd National Housewares exhibit to be held Jan. 11-15 in Chicago's Navy Pier and adjacent Drill Hall.

A record of 12,000 buyers from the nation's 50 states, Canada, and foreign countries are expected to be registered for the show. The exhibit will be open from 9 AM to 5 PM the full five days.

Westinghouse Div. To Provide Counsel To Parts Fabricators

Seventeen major fabricators of industrial parts from high-pressure thermosetting plastic laminates will form the nucleus of a new association organized to take advantge of the engineering, research, manufacturing and marketing counsel of Westinghouse Electric Corp.'s Micarta Div.

The first meeting of the new organization—The Micarta Fabricator's Assn.—will be held early in 1960 at the Westinghouse Micarta plant in Hampton, S.C. The first project of the association will be a training program to aid fabricators in reducing costs and improving quality on the thousands of items they make from Micarta materials for industrial applications.

Technical Societies To Meet In Cleveland, April 18-19

A joint national conference committee, composed of members representing ASME, IRE and AIEE, have selected Cleveland as the site of the third annual Conference on Automatic Techniques. The combined conference will be held at the Cleveland-Sheraton Hotel April 18-19.

Youngstown Announces Expansion Projects

The Youngstown Sheet & Tube Co. has announced plans for five major expansion projects at its Indiana Harbor Works. They include installation of a 52-inch, six-stand tandem cold reducing mill, installation of a continuous galvanizing line, construction of an 87-oven coke battery, a 300-foot extension of the ore dock for additional raw material handling and storage facilities, and additional equipment for finishing seamless tubing.

Plant Maintenance Conference

Seventy-one speakers will address the 11th Plant Maintenance & Engineering Conference at Philadelphia, Jan. 25-27. The conference, usually one of the best attended meetings of the year, is held annually in conjunction with the Plant Maintenance & Engineering Show at Philadelphia's Convention Hall.

PHCIB Elects Fitzpatrick President

William A. Fitzpatrick, general manager of M. J. Gibbons Supply Co., Dayton, Ohio, was elected president of the Plumbing-Heating-Cooling Information Bureau at a meeting of the board of directors in Atlantic City, N.J., Oct. 24.

Other officers elected were: Lee Martin, president of NIBCO, Inc., Elkhart, Ind., — vice president; John M. Dumser, director of sales, Wolverine Tube, Div. of Calumet & Hecla, Inc., Allen Park, Mich., — treasurer; Norman J. Radder, secretary; and Norman Wicks, executive director.

Proctor Electric Changes Division Name

Walter M. Schwartz, Jr., president of the Proctor Electric Co., Philadelphia, has announced the change of name of their Equipment Div. to the "Controls Div." The reason given for the change is that the division's concern is primarily with appliance control devices, and the new name is more indicative of its primary function.

P. B. Davies, sales manager of the Controls Div., stated that: "All devices manufactured are in the controls field. Proctor recently began marketing a new 'Selectronic' pan control and soon will start production of a new 'Vari-

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Hold 75th Anniversary Fete For Borg-Warner Division

The 75th anniversary of the founding of the Ingersoll Products Div., Borg-Warner Corp., was celebrated Oct. 23 at Chicago's Conrad Hilton Hotel. Roy C. Ingersoll, chairman of the board of Borg-Warner, was honored on his 75th birthday with the presentation of a bronze plaque dedicating his company's new research facilities in Des Plaines, Ill.

The research facility was named the Roy C. Ingersoll Research Center of Borg-Warner Corp. Borg-Warner at present produces 2,000 products and services, and has four Ingersoll divisions.

Jim Ingersoll, president of Ingersoll Products Div., Borg-Warner Corp., addresses a gathering on the dual occasions of the Ingersoll Products Div.'s 75th anniversary, and his father's 75th birthday.

ROY. C. INGERSOLL

MPM PHOTOS

therm' infinite control. With acceptance by electric range manufacturers and consumers, this division is enjoying greatly-increased business and, during 1960, we may expect even greater volume."

EIA Service Program to Supplement Training Aids

The Electronic Industries Association Service Committee, under Chairman Steven R. Mihalic, General Electric Co., will supplement the Association's technical training aids for service technicians with films and a manual on customer relations and salesmanship, specifically planned for service technicians. These training aids, when completed, will be made available to all radio-TV-electronics service dealers and technicians, Mihalic said.

The new EIA program is expected to benefit the independent service industry by providing technically-qualified servicemen with an opportunity to learn the fine points of handling customers and selling services.

Republic Plants Get Safety Awards

Fifteen Republic Steel Corp. plants were honored during the 47th annual National Safety Congress in Chicago for outstanding safety performance during the 12-month period ended June 30. Of the Republic plants honored, 13 received honor award plaques for having completed the 12-month period without a lost-time accident.

Louis Allis Co. To Build New Research Center

The Louis Allis Co., Milwaukee, manufacturer of electric motors, generators, and adjustable speed drives, has announced the construction of a new research and development center in Greendale, Wis. The building, which will be staffed by 100 engineers and technicians, will double the size of the present engineering and physics laboratories.

Acme Steel Opens New District Office

Acme Steel Co., Chicago, has opened a district sales office in the Chamber of Commerce Building, Indianapolis, Ind., according to Neal C. McNutt, vice president, Strip Sales Div. The office will handle all commercial flat rolled products by Acme Steel, Chicago, and all products of Acme-Newport Steel Co. in Newport and Wilder, Ky. James G. Wiley is sales manager for the district.

Finish Engineering Moves

Finish Engineering Co., Erie, Pa., makers of decorating equipment, have recently moved into their new plant, with more than twice the floor space of their previous building. The company produces spray masks, vacuum plating racks, mask washers, spray machines and fixtures, paint wiping machines, and roller coaters.

September Shipments of Aluminum

Shipments of aluminum sheet and plate for September totaled 105,811,000 pounds, according to The Aluminum Association. This increased total shipments for the first nine months of '59 to 1,161,536,000 pounds. Of the September total, 91,185,000 pounds were non-heat-treatable aluminum, and 14,626,000 pounds were heat treatable aluminum.

Safety in Die Designing Stressed by Cope in PMI Talk

"The first responsibility of die designers is to design parts of sufficient size and strength so that they will not fall off the die." This statement provided the crux of a speech on safety in die design given by Stanley Cope, head of the Acme School of Die Design Engineering, South Bend, Ind., at a meeting in Chicago, Oct. 20. The event, sponsored by the Chicago District of the Pressed Metal Institute and the Tool & Die Institute, was attended by approximately 250 members and guests of both organizations.

In his talk, Cope stated that accidents fall into two categories: (1) those which occur when the operator is doing what he is supposed to be doing; and (2)

New Frigidaire Appliances For 1960

High standards in convenience, function, and styling have been achieved in Frigidaire's 1960 home appliances, according to Herman F. Lehman, general manager of Frigidaire. He said that stand-out models in the line are stylish refrigerators and food freezers which feature "Frost-Proof" freezing, and 40-inch electric ranges with *two* ovens that pull out for easy cleaning. Also featured is a pull-out oven in a 30-inch range with French doors.

There are 14 new refrigerators, 11 electric ranges, and six upright freezers currently being shown to Frigidaire dealers across the country. Product shipments are now underway.

Lehman said that the most important advancement in refrigerators is the "Frost-Proof" freezing system, which has been incorporated into four refrigerator-freezer models and two upright food freezers. The system does not allow frost to collect.

All of Frigidaire's '60 refrigerators are equipped with a new magnetic seal which silently pulls the door shut, hugging it tight against the cabinet sealing surface.

Appliance colors for 1960 range from Aztec copper and charcoal gray to turquoise, yellow, pink, and white. Refrigerators are available with right or left hinged doors and a white porcelain enamel finish is optional on some models.

Oven cleaning is made easy with this 1960 electric range by Frigidaire. The range is equipped with two pull-out ovens so that even the back walls can be reached easily. Surface heating units tilt up out of the way and porcelain drip bowls are removable for washing. All surface unit switches are grouped on the right and oven controls on the left.

those which occur when the operator is doing what he is *not* supposed to be doing. An example of the latter, or indirect-cause category, is when the operator puts his hand under a guide post or pressure pad.

Cope went on to say that a die is not dangerous; only *parts* of a die are dangerous. Thus, he breaks the die into three safety zones. The first zone is where the actual work takes place; the second zone is where protruding metal moves from one place to another, extending the trapping area; and the third zone is everything outside the first two zones.

Cope said there is little the die designer can do about the first zone, but there is much to be done about the second and third zones in the way of safe design. In the second zone, the designer can allow clearances and replace such parts as the spring stripper with a solid stripper. In the third zone, he suggests guarding any part which closes on another part, and to guard cams and stop blocks as well as guide posts.

To illustrate his overall point, Cope showed a slide depicting a chart of the accident rate caused by dies in England (1947-54). In almost every year, the accidents from partially guarded dies were just as frequent as from completely unguarded dies.

Cope's cure: "Before letting an operator run the die, the die designer should practice taking each blank out of the die and putting it back in. If there is any danger, he'll soon find out."

DeSoto Chemicals Announces Quarterly Sales, Profits

DeSoto Chemical Coatings, Inc., formerly United Wallpaper, Inc., has reported that sales for the quarter ended Sept. 30 were $12,775,436, approximately one per cent greater than the total for the corresponding quarter in '58. Profits were also higher. After-tax profits were $723,164 compared to $716,215 last year. S. U. Greenberg, president of the company, said that the industrial coatings volume has been reasonably good for the past quarter.

SPE Meeting In Chicago

Papers of special interest to design and production engineers in the automotive and appliance industries will be presented at the 16th National Annual Technical Conference of the Society of Plastics Engineers, Inc., Jan. 12-16, at the Conrad Hilton Hotel, Chicago.

Maytag Declares Year-end Dividend

A year-end dividend of fifty cents per share and a regular quarterly dividend, also of fifty cents per share, were declared by the board of directors of The Maytag Co. Both are payable Dec. 15 to shareowners of record at the close of business Dec. 1.

First Industrial Building Show Set For December, 1960

Fifty companies have already contracted for space for the first annual Industrial Building Exposition & Congress to be held at the New York Coliseum Dec. 12-15, 1960. A group of the nation's leading architects and industrial executives comprise the board of sponsors.

Howard M. Jones, chief engineer and assistant secretary of Armstrong Products Corp., died on Sept. 30. He served Armstrong in several capacities for 54 years.

Quincy Products Expands

The expansion of production facilities at the Quincy Products Co. was an-

G = the Mark of Quality

In Trim Hardware, Your Best Bet Is To Call For Grigoleit

- ALUMINUM TRIM
- DECORATIVE METALS
- CHROMED HARDWARE
- STOCK EMBOSSED PATTERNS
- MOLDED PLASTICS

. . . all from press or rolled section tools — anodized — chrome plated — painted — silk screened — lithographed. All in our own plant!

For distinctive decorative trim . . . bezels, control panels, escutcheons for ranges, refrigerators, freezers, washers, dryers and combinations. Add eye appeal — buy appeal to your product, choose Grigoleit!

FOR ALL CUSTOM-MADE OR STOCK TOOLED APPLIANCE HARDWARE, CALL ON —

THE GRIGOLEIT COMPANY
Over 30 Years in Plastics
740 E. NORTH ST., DECATUR, ILL.

SAVE TOOL COSTS

Use
NAGEL-CHASE
WELDED
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FHP SINGLE GROOVE
V-BELT PULLEYS

Available in sizes from 2.4" to 12" P.D.

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- Each size of pulley available in several bore sizes.
- For "A" or "B" Section V-Belt

Use Nagel-Chase specialized experience and facilities for the economical production of special pulley designs and sizes. Write, sending for quotation.

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The NAGEL-CHASE MANUFACTURING CO.
2817 North Ashland Avenue, Chicago 13, Ill.

nounced by M. Stubnitz, president, Stubnitz Greene Corp., the parent company. Quincy Products manufactures coils, condensers, and other heat transfer equipment, and is a major supplier to the refrigeration and air conditioning industry.

Norge Sales Hit Peak

Factory shipments of Norge home appliances reached 103,000 units in October, setting an alltime monthly record. "The peak sales month topped the best previous 30-day period of October in 1956, the only other 100,000-unit month on record," said Judson S. Sayre, president, Norge Division, Borg-Warner Corp.

He also reported that distributor sales for the week ending November 2 set still another record for any week in Norge history. "October volume climbed 23 per cent ahead of October of 1958 and year-to-date sales are 38 per cent ahead of the first ten months of last year," he added.

"The warranty card return has marched steadily upward since early in April. The curve for the week ending May 30 rose 7 per cent above the previous eight weeks. In the next consecutive four-week period it jumped 20, 25, and 33 per cent — finally showing a 36-per cent increase during the eight weeks ending October 17," Sayre pointed out.

"Brisk consumer demand for all products in general, and 1960 automatic washers in particular, is the main reason for the three sales records," Sayre said. "Advertising, merchandising, a new warranty plan, and product training on a nationwide scope stimulated this demand," he added.

"Automatic washer sales in October were 47 per cent ahead of the same month last year, with refrigerators and clothes dryers showing gains of 18 and 17 per cent, respectively," he said.

Welding Society Holds Show

The American Welding Society will hold its 41st annual convention and exposition Apr. 25-29 in Los Angeles. Technical meetings will be held in the Biltmore Hotel, and the welding show in the Great Western Exhibit Center.

Brinker Goes to J. I. Case Co.

A presstime report states that John H. Brinker has just resigned his post as vice president and general manager of the Permaglas Div., A. O. Smith Corp., to accept the position of executive vice president of the J. I. Case Co., Wisconsin-based manufacturer of farm and construction machinery. He was elected to that post, and also a member of the J. I. Case board of directors, at the company's regular board meeting Nov. 5.

Lee Named Head Of New Westinghouse Dept.

Jack D. Lee, formerly manager of the laundry equipment department of Westinghouse, has been appointed head manager of the firm's newly-created dealer development department. The appointment was announced by John J. Anderson, manager of the major appliance division, who also said that Charles Vondran, merchandise manager of refrigerators, has been named to succeed Lee as head of the laundry department.

Special Engineering Moves

Special Engineering Service, Inc., manufacturers of a line of automatic pressroom equipment, has moved their sales and engineering headquarters to Dearborn, Mich.

Two Meetings For Midwest Enamelers

The Midwest Enamelers Club has announced two general meetings. The first will be held Dec. 5 at the Sheraton Towers Hotel, Chicago. The subject for the Dec. 5 talk will be low temperature porcelain enamels. The second meeting will be held on Jan. 16, also at Chicago's Sheraton Towers Hotel.

Republic Appliance Corp. Sells Outstanding Stock

Milton J. Stevens, chairman of the board of Republic Appliance Corp., has announced that a contract has been signed whereby all of the outstanding stock of the corporation will be acquired by Trans Continental Industries, Inc. Republic is one of the largest independent manufacturers of water heaters in the world. It has plants in Erie, Pa., Los Angeles, Portland, Ore., and Chicago. Current sales volume of Republic is at the rate of $14 million.

Crane Co. Earnings Rise

Consolidated net earnings of the Crane Co. for the nine months ended Sept. 30 were $4,297,000, compared with $1,738,000 for the same period in 1958. The '59 figures are exclusive of a net non-recurring gain of $577,000 on the sale of fixed assets.

Orders Up For Screw Machine Parts

September orders of screw machine parts were 16 per cent above August and 40 per cent greater than September of 1958, according to the National Screw Machine Products Assn.

MacDermid Stock Sold To Company Employees

Archie J. MacDermid recently sold controlling interest in MacDermid, Inc., Waterbury, Conn., developer and manufacturer of metal finishing chemicals.

Under terms of the $1,500,000 transaction, representing 31 per cent of the outstanding stock, MacDermid sold 16,240 shares to 55 employees at a price of $33.16 per share. His remaining holdings of 29,000 shares were purchased by the company at the same price.

Kelvinator Employment Payroll and Production Doubled

B. A. Chapman, executive vice president and general manager of the appliance division of American Motors Corporation, reports that Kelvinator's Grand Rapids employment, total payroll, and production have doubled during 1959, and sales have increased nationally by 30.8 per cent. The first ten days of October are ahead more than 45 per cent.

Consolidation of basic manufacturing in Grand Rapids from the company's Peoria, Ill., and Detroit plants was completed at the beginning of the year, reducing transportation and distribution costs and achieving some manufacturing economies, Chapman said.

"Total payroll at the local plant since the consolidation move has increased from $6 million to $12.2 million as of the end of September," Chapman said.

Production of major appliances, excluding compressors which are also sold to other manufacturers of refrigeration equipment, has also doubled during this year.

Scoring the greatest sales increases during the year have been refrigerators and home laundry equipment, the key volume products for Kelvinator as well as the industry generally. Refrigerators are running 40 per cent ahead of last year, while automatic washers are 37 per cent ahead, Chapman said.

INDUSTRY PERSONALS

Hamilton Mfg. Co., Two Rivers, Wis., has announced that **F. R. Amthor** has been named engineering vice president, according to E. P. Hamilton, president. Amthor has most recently been engineering vice president of Portable Electric Tools, Chicago. Prior to that, he held a number of engineering and administrative positions with the General Electric Co.

AMTHOR

COX

The O. Hommel Co. has named **Dr. John E. Cox** as director of research and development for the Porcelain Enamel Frit Div., according to an announcement by President Ernest M. Hommel. Dr. Cox will be responsible for the division laboratories at the Carnegie, Pa. plant, and also for the fundamental research work, for which he has been responsible in the past, at Mellon Institute.

Whirlpool's Maury Marshall, general manager, public relations since Jan., 1958, left his position Oct. 31 to resume Doctoral studies at the College of Communications Arts, Michigan State University. During the past two years, he instructed the class in industrial management at the Whirlpool Foundation Technical Institute, and was guest lecturer at Western Reserve University, Cleveland, Ohio, and Indiana University at Bloomington, Ind.

National Electric Welding Machines Co., Bay City, Mich., has announced two personnel promotions in its development section. **Paul Thorne,** formerly chief electrical engineer, has been named chief electrical and development engineer, and **Harold Bach** has been appointed chief welding engineer.

Western Brass, Metals Division, Olin Mathieson Chemical Corp., has appointed **John F. Hack** national accounts manager, according to David T. Marvel, vice president for Western Brass sales.

Marchant Division, Smith-Corona Marchant, Inc., Oakland, Calif., has appointed **John D. Kemper** vice president-engineering. The appointment was announced by Walter Kassebohm, executive vice president and general manager. Kemper previously held the post of chief engineer, heading calculator and adding machine research, development, and engineering. He will continue to direct those activities.

Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., has elected **John P. Anderson** to the office of assistant secretary. Birdsboro makes steel mill equipment, hydraulic presses, and porcelain-on-steel wall panels.

Avco Corp.'s Nashville Division has announced the appointment of **Edward C. Carman** to the new position of director of business development planning. The division is a leading producer of stainless steel and honeycomb structural materials.

Iron Fireman Mfg. Co.'s Heating Equipment Div. has announced the appointment of **Earl L. Bedard,** former district manager for a prominent combustion control manufacturer, to its engineering staff. According to R. C. Wright, Iron Fireman vice president, engineering, Bedard will make his headquarters in the Cleveland office.

Crucible Steel Co.'s Midland Works has appointed **William E. Lynch** as superintendent of the blooming mill. He replaces O. N. Carter, who has retired. Lynch had been assistant superintendent of the mill since 1950.

Mahoning Valley Steel Co., a subsidiary of General Electric, has named **Anthony J. Gizzi** as general manager of the Sheet Steel Section, according to Donovan J. Murray, the steel company's president.

Prizer-Ware has announced the appointment of **Samuel E. O'Connell** as general sales manager. Prizer-Ware was recently purchased by Textile Machine Works, Reading, Pa. O'Connell will be in charge of setting up national representation and distribution for the cookware line, according to Hermann P. Good, manager of Textile's Foundry Div.

Amana Refrigeration, Inc. has announced the advancement of **S. J. Seibert** to the managership of the Air Conditioning Dept. The department includes both room air conditioners and central system air conditioning. The appointment was announced by Walter Wendler, vice president in charge of sales.

The Maytag Co. has named **Bob Grinnell** as regional sales manager in a 26-county, Northeast Michigan area served by the appliance firm's Chicago branch, according to an announcement by R. W. Weed, Chicago branch manager.

The Dexter Co., manufacturer of sheet feeding and materials handling equipment for the metal decorating and fabricating industries, has appointed **F. I. Walsh, Jr.** to the newly-created post of vice president and general manager. Walsh will make his headquarters at the Dexter plant in Pearl River, N.Y.

Gulton Industries, Inc., Metuchen, N.J. has announced four appointments, according to J. Paul Jordan, vice president. **David A. Lupfer** has been named general manager of the Materials and Ceramics Div.; **Robert Day** was appointed general manager of the Gulton Instrumentation Div.; **Dr. Robert C. Shair** was named as director of research for the Alkaline Battery Div.; and **Harlan P. Tripp** was named manager of the Ceramics Coating Dept.

The Market Forge Co., Everett, Mass., 63-year old manufacturer of commercial steam cooking equipment, stainless steel hospital equipment, food storage shelving, automotive specialties, and janitorial equipment, has named **Herbert Swanson** as chief engineer, and **Earl H. Barry** as manager of the Janitorial Equipment Div.

Swanson was formerly manager of design engineering in the commercial equipment department of Hotpoint. Prior to that, he was chief engineer of the Griswold Mfg. Co., Erie, Pa. Barry joined Market Forge in 1952 as assistant sales manager of the Metal Specialties Div., and subsequently was plant manager for the division.

SWANSON

VAN STEE

Kelvinator has announced the appointment of **Ray A. Van Stee,** former purchasing agent of the Grand Rapids, Mich. plant, as director of product quality. Announcement of the new position was made by B. A. Chapman, executive vice president and general manager for the division. Van Stee will coordinate product quality at the manufacturing,

engineering, home economics, and service levels. He will be headquartered in Grand Rapids.

Pemco Corp. has announced the appointment of **Howard J. Smith** as assistant to Charles P. Lohman, vice president. Prior to joining Pemco, Smith was a member of the sales division of Titanium Alloy Mfg. Div., National Lead Co., concentrating particularly on sales development of chemical products used by ceramic, electronic, metallurgical, and other industries.

The Appliance & Automotive Controls Div. of Controls Co. of America has reported that **John A. Kovas** has been named general sales manager. Donald Strathearn, vice president and director of sales for the division, announced the appointment. In his new position, Kovas will direct both the central office sales force and the field selling organization.

Clearing Division of U.S. Industries, Inc. has named **Eugene P. Cunningham** as senior vice president. The announcement was made by A. Leo West, executive vice president of the firm.

Cunningham has been with the Clearing organization since 1934, when he joined the engineering department. In 1952, he was appointed general sales manager, and in 1954 was named vice president of sales.

Ingersoll Products Div., Borg-Warner Corp., has elected **M. R. McLary** as executive vice president and manager, according to J. H. Ingersoll, president of the division. McLary has been with Ingersoll Products since 1952, starting as chief engineer. Subsequently, he was advanced to other assignments, including director of engineering and research, production manager, and works manager. Previously, he was master mechanic of Chrysler Corp.'s Airtemp Div.

Hussmann Refrigeration, Inc. has announced the election of **Charles E. Hall** to the position of vice president-regional accounts, according to A. B. Biddle, executive vice president. Hall has been with Hussmann since 1950, and most recently held the position of general sales manager — regional accounts.

Dravo Corp., Pittsburgh, has named **C. R. Boyer** as manager of the Light Metals Dept. of their Engineering Works. He will supervise sales, engineering, contract administration, and production.

Illinois Tool Works has elected **Eugene W. Fuller** as executive vice president and **James R. Russell** vice president and chief financial officer, according to an announcement by Harold Byron Smith, president.

Kaiser Steel Corp. has appointed **C. Fred Borden** as executive vice president, it was announced by Jack L. Ashby, president. Borden had been vice president in charge of sales since 1950. Before joining Kaiser, he was with Columbia Steel Co. for nine years.

Whirlpool's Robert W. Armstrong has assumed additional public relations responsibilities with his promotion from manager of public relations for the RCA Whirlpool sales department to general manager of public relations for the company.

The Siegler Corp. has elected **Robert K. Miller** as vice president, according to John G. Brooks, president. Miller has served since Sept., 1958 as president of the Holly-General Div. of Siegler, which manufactures heating and air conditioning equipment at Pasadena, Calif.

Narda Ultrasonics Corp., Westbury, N. Y., has announced that **Dr. John C. McGregor,** president, will assume full operating as well as policy direction of the company, a volume producer of ultrasonic cleaning equipment.

The Maytag Co. has named **Howard Currant** as a publications writer in its service department. He joined the firm last April as a service trainee. A native of Chicago, Currant was graduated from the University of Iowa in 1954.

Concurrently, **Clarence Eaton** has been promoted to head of the paint department at the company's automatic washer and dryer plant, according to George Alward, superintendent of production at the plant. Eaton, who joined the firm as a draftsman in 1937, had been a general foreman in the dryer assembly department since 1952.

Cribben & Sexton Co., Chicago, manufacturers of Universal gas and electric ranges and Universal Chef commercial cooking equipment, has appointed **Robert J. Schreiber** as national service manager. He will coordinate factory, field, and parts service on commercial and domestic products. Schreiber formerly held a management post with Frigidaire. The appointment, according to Ronald J. Shepherd, vice president-sales, is "Another step in the constant upgrading of the entire service function."

Industry news

→ *from Page 79*

Waste King Earnings Up

Waste King Corp., Los Angeles, reports a 60-per cent increase in net profits achieved on record high sales for the six months ended Sept. 30, 1959. Consolidated sales for the company and its subsidiary, Cribben & Sexton Co., Chicago, reached $18,685,112 in the first half of this fiscal year, according to Bertram Given, president. For the comparable six-month period a year ago, before Waste King acquired Cribben & Sexton, sales of the two companies totalled $15,201,196.

A breakdown of the total sales volume shows $11,857,346 accounted for by Waste King appliance products and its Technical Products division, up 28 per cent from the $9,230,350 for the first six months a year ago. Sales of Cribben & Sexton's Universal and Magic Chef products were reported up 14 per cent for the half year from $5,978,846 to $6,827,766.

Small Lot Stamping Institute Elects Officers

The sixth annual meeting of the Small Lot Stamping Institute was held Nov. 2-3 at the Hotel Sherman, Chicago, and the following officers were elected: Richard Boker, V. A. Boker & Sons, Minneapolis, Minn., president; Stan Wochnik, Short Run Stamping Co., El Monte, Calif., vice president; and Melvin Lorentz, HPL Mfg. Co., Cleveland, Ohio, secretary-treasurer.

Midland-Ross Acquires Surface Combustion

The Midland-Ross Corp. has announced that it has acquired the Surface Combustion Co., with headquarters in Toledo and Columbus, Ohio, for $23 million in cash. The "Janitrol" heating and air conditioning products for residential, commercial, and industrial use, and Janitrol aircraft and missile equipment, represent major areas of the Surface operations. Surface is also a leading designer and producer of industrial furnaces and other heating equipment for industries, as well as the "Kathabar" dehumidification systems.

Sales of Surface, including Janitrol, have averaged approximately 45 million dollars a year in the last five years. Net profits have averaged in excess of two million dollars in the same period. Wade N. Harris, president of Midland-Ross, estimated that the sales of the combined organization in 1960 should approximate $120 million.

NEW INDUSTRIAL LITERATURE

Filmed Laminates

Information on a line of high tensile strength, pressure-sensitive films and laminates is available free of charge. This manufacturer's signs and trade marks are developed specifically to the requirements of truck signs, window signs, nameplates, and product markings for indoor and outdoor use on both light and heavy equipment. A newly-developed clear top coat is said to provide a highly-protective coating for the films. For detailed information, write to Dept. MPM, The Meyercord Co., 5323 W. Lake St., Chicago 44, Ill.

Iron Phosphate Process

Bulletin 1698 contains quality control data on an automated cold iron phosphate process. This is said to be the newest pre-paint treatment for steel, and is also said to provide on-the-line savings of 50 per cent or more. For the bulletin, write to Dept. MPM, Amchem Products, Inc., Ambler 21, Pa.

Wirebound Box Booklet

"What to Expect from Wirebounds" is the title of a booklet showing the advantages of using wirebound boxes. These include superior shipment protection, economical warehousing, and fast, secure packing. The booklet is available free of charge from Dept. MPM, Wirebound Box Manufacturers Assn., 222 W. Adams St., Chicago 6, Ill.

Architectural Grilles

A free catalog offers over 100 grille designs for architectural application. The grilles are said to always lie flat, never bend or warp, and provide plenty of open space for passage of air. Write to Dept. MPM, Hendrick Mfg. Co., 79 Dundaff St., Carbondale, Pa.

Bulletin Gives Practical Tips On Ultrasonic Cleaning

Alkaline and acidic detergents are frequently better for ultrasonic cleaning than the more viscous solvents. This is one of the six practical tips given in a new service bulletin published by a pioneer manufacturer of specialized chemical compounds for industrial cleaning and metal treating.

Based on extensive field work with the cleaning method, the bulletin describes the process by which high frequency sound waves impart intense scrubbing action to speed cleaning. The method's success, however, depends in large measure on the cleaning solution, according to the bulletin. The bulletin describes compounds which have proved effective, and the types of operation ultrasonic cleaning does best.

Copies of the service bulletin may be obtained from Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

High Density Grinding Balls

A colorful four-page folder describes high density alumina grinding balls. Manufactured by the "Isostatic" pressing process using a 96 per cent alumina material, the balls have a specific gravity of 3.80 grams per cubic centimeter. The media is fired in a continuous tunnel kiln at temperatures in excess of 2950° F. For the literature, write to Dept. MPM, American Refractories & Crucible Corp., North Haven, Conn.

Airless Spray System

An eight-page illustrated brochure in two colors describes the idea behind an airless spray system, how it works, the equipment, and its advantages. According to the manufacturer, coating material savings run as high as 50 per cent with the system. The airless spray process can be used with all types of coating material that can be air sprayed, brushed, or dipped, as well as with "fine" finishes for appliances, furniture, etc. The spray system is said to be ideal for automatic lines as well as hand use. To obtain a copy of the brochure, write to Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Powdered Metals Folder

A free information folder which describes how to convert powdered metal into machine parts is available. This manufacturer claims quality control from blueprint to finished machine part. Specified strengths and tolerances are maintained from the first part to the millionth, it is stated. For the free folder, write to Dept. MPM, Norwalk Powdered Metals, Inc., 8 Muller Park, Norwalk, Conn.

Automatic Merchandising Directory

The 1960 Directory of Automatic Merchandising is now available. It is entirely new and includes a complete section on new equipment, a complete listing of all the machine models manufactured by each machine manufacturer, and a complete list of all the operating companies who are members of the National Automatic Merchandising Assn. A copy of the directory may be had by sending $4.50 to Dept. MPM, National Automatic Merchandising Assn., 7 S. Dearborn St., Chicago 3, Ill.

Stainless Steel Strainer

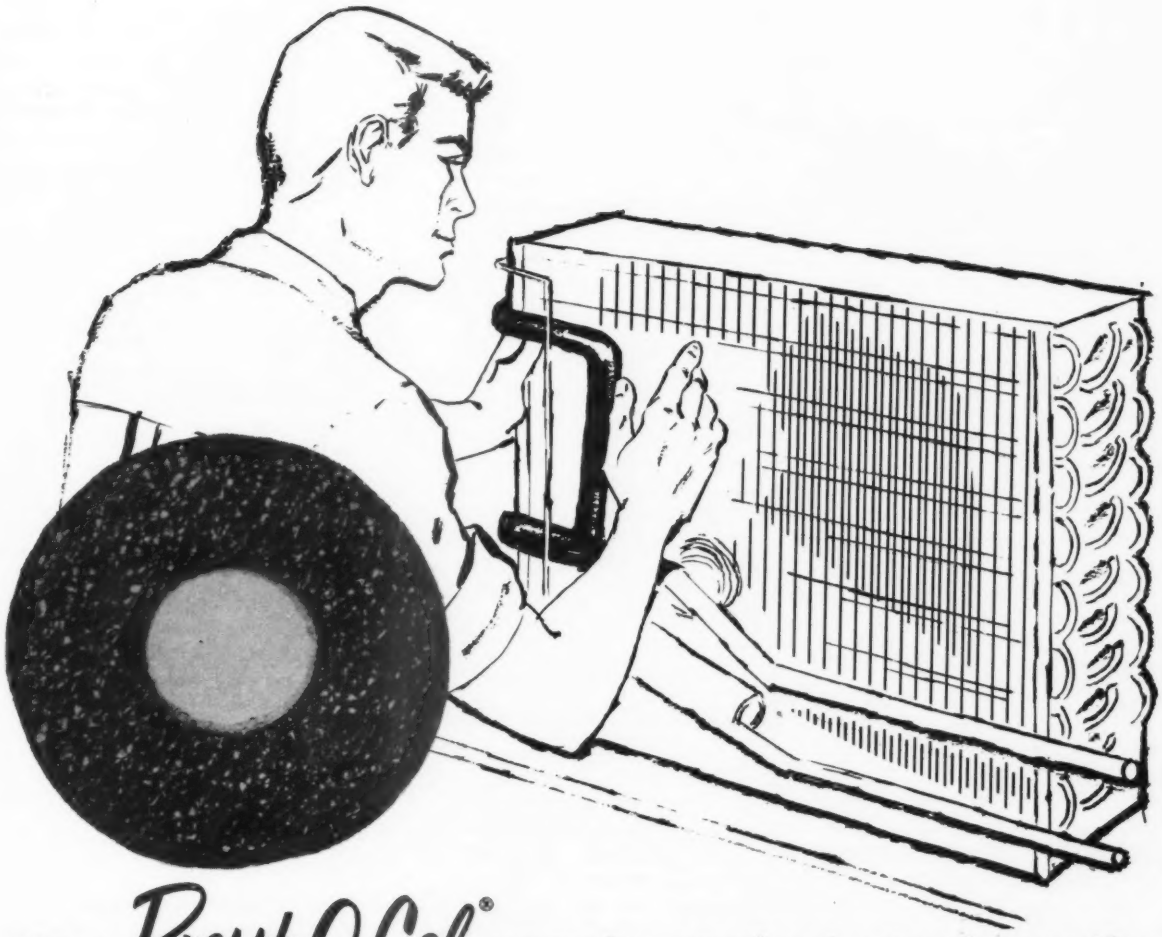
A strainer made entirely of stainless steel and designed for high pressure lines is detailed in data sheet 8310. The strainer screen assembly is said to provide a large area for dependable fluid flow and minimum maintenance at high pressures up to 4000 psi. For complete information, write to Dept. MPM, Spraying Systems Co., 3201 Randolph St., Bellwood, Ill.

Complete Finishing Systems

An illustrated index of complete finishing systems available from this company is offered. The manufacturer has a complete selection of all equipment items needed for a fully-integrated finishing installation, with each component engineered to work together. The company also maintains a customer research laboratory. The folder offered tells how to obtain additional information on each item. It is available from Dept. MPM, The Devilbiss Co., Toledo 1, Ohio.

High-Level Circulating Units Bulletin

High-level circulating units for redistributing warm air from ceilings to floor areas are described in a four-page, illustrated bulletin. Bulletin HLC-59 covers features and engineering data on units intended to put waste heat to work by recirculating warm air from



New Presst-O-Cel® guards against condensation and "sweating"... insulates... provides vapor barrier

This new lightweight neoprene tube and pipe insulation is made up of millions of tiny inert gas-filled cells with the result that it forms an effective wall against heat, cold or moisture wherever it is used.

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high levels to floor level. The units may also be used for fresh air supply by addition of a duct intake from the roof. They may also be converted to unit heaters by addition of a heating section and steam or hot water lines. For the bulletin, write to Dept. MPM, L. J. Wing Mfg. Co., Linden, N.J.

Pickling Compounds Bulletin

Information on powdered pickling compounds for various applications is shown in a four-page technical bulletin. The bulletin describes the advantages of powdered pickling, then cites a number of specific pickling problems with the compound recommended for each, together with a description of the compound. The description includes working temperatures, concentrations used, and length of treatment time. To obtain the bulletin, write Dept. MPM, Frederick Gumm Chemical Co., 538 Forest Ave., Kearney, N.J.

Measuring Tools Catalog

A guide and catalog of precision measuring tools and instruments consists of 96 fully-illustrated pages. Detailed information on micrometers, vernier depth gages, snap gages, protractors, dial indicators, and other equipment is given. The catalog may be obtained from Dept. MPM, Scherr-Tumico, 200 Lafayette St., New York 12, N.Y.

Cold Heading Wire

A four-page brochure on stainless steel cold heading wire is available. The brochure compares the cost, corrosion resistance, and cold heating characteristics of the commonly used grades of stainless steel cold heading wire. To receive a copy of this brochure, write to Dept. MPM, Universal-Cyclops Steel Corp., Station St., Bridgeville, Pa.

Cooling Tower Bulletin

Bulletin KT-104 explains the construction, specifications, and performance details for cooling towers. The towers have a centrifugal-type fan for quiet indoor and outdoor operation. Attention is devoted to the fan, fan motor, mounting base and V-belt drive, and one-piece welded sump pan. Capacities for the models range from 7.5 to 25 tons. The galvanized steel cabinet is covered on the exterior with aluminum paint. The sump pan is hot-dip galvanized after fabrication. The motor has ventilated weather protection. The bulletin is available upon request to Dept. MPM, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.

Multipress Bulletin

An illustrated four-page bulletin on a multipress line has just been published. The bulletin gives general data on the new R, S, and T series, available in a variety of models with capacities from one to twelve tons. Standard multipress accessories are also described in the bulletin. For a copy, write to Dept. MPM, Denison Engineering Div., American Brake Shoe Co., 1160 Dublin Rd., Columbus, Ohio.

Black Oxide Finish

A new process for producing a black oxide finish on steel is described in a four-page folder. The oxide is said to contain entirely new concepts of activators, catalysts, penetrants, and rectifiers. The "dragout" is said to be 25 to 30 per cent less than conventional blackening solutions. To obtain the folder, write to Dept. MPM, The Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn.

Aluminum Products Booklet

A colorful, 24-page booklet gives detailed information on aluminum mill products including sheet alloys, coiled sheet and specialty sheet products, plus extruded shapes, architectural and structural shapes, and other aluminum materials.

Engineering data includes relative fabrication characteristics, and information on corrosion resistance, alloy strengths, thermal and electrical conductivity, reflectivity, emissivity, and impact strength and stiffness. There is also a guide for the selection of sheet alloys, and a table showing typical properties of aluminum casting alloys. Individual tables compare major properties with other materials.

For a copy of the booklet, address Special Projects Editor, METAL PRODUCTS MANUFACTURING, York St. at Park Ave., Elmhurst, Ill.

Electrostatic Hand Gun Spraying Brochure

"Spray Painting with the Electrostatic Hand Gun" is the title of a brochure which features facts on the principles and uses of the recently-introduced No. 2 process electrostatic hand gun. Six pages of pictures on production applications are included in the brochure. The manufacturer claims paint savings of up to 90 per cent, a 60-per cent savings in man-hours, production from two to three times the rate formerly obtainable, and savings in cleanup and maintenance. The brochure is available from Dept. MPM, Ransburg Electro-Coating Corp., P.O. Box 23122, Indianapolis 23, Ind.

Lead In Ceramics Booklet

A 44-page illustrated booklet entitled "Lead in the Ceramic Industries" is now available. Advantages claimed for lead in porcelain enameling are that it reduces the firing temperature at which the enamel can be applied to the base metal, and it increases the "chip-resistance" of the enamel. For the booklet, write to Dept. MPM, Lead Industries Assn., 60 E. 42nd St., New York 17, N.Y.

Aluminum Curtain Wall

A colorful, eight-page brochure describes a new aluminum economy wall for multi-story building, which is said to cut material and labor costs in curtain wall installations. The wall is said to decrease wall loads, and provide enough flexibility to enable the architect to integrate the system into his own design. Copies of the brochure are available from Dept. MPM, Reynolds Metals Co., Richmond 18, Va.

Soluble Drawing Compound

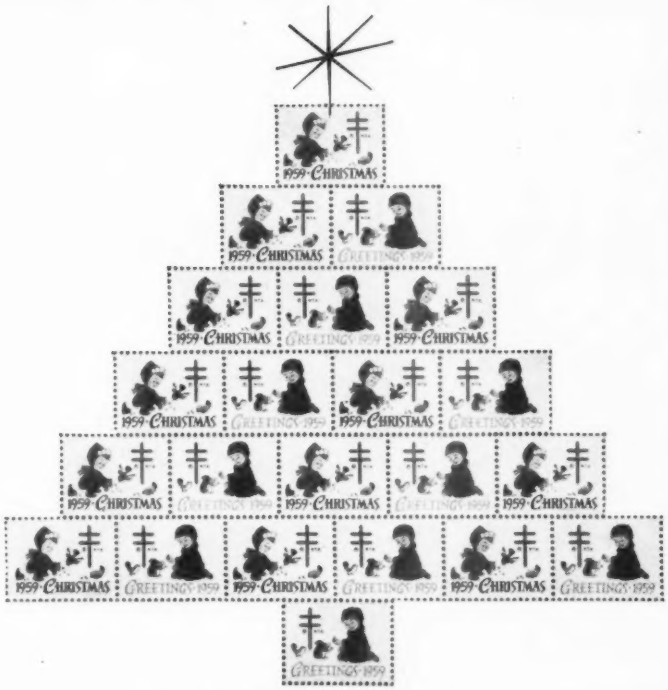
A technical data sheet is offered which gives details of a drawing compound which is said to permit severe draws equalled only by colloidal graphite without the difficulty in cleaning experienced with graphite. The compound can be applied manually, or with automatic equipment by spray, roller coater, flow coater, or dip tank. The compound is said to be completely soluble. To obtain the data sheet, write to Dept. MPM, L. R. Kerns Co., 2659 E. 95th St., Chicago 17, Ill.

Appliance Trims

"Plan Book of Metal Mouldings" is the title of a booklet offered on appliance trims. Custom tailored sections, as well as roll-formed, stainless steel rings, are offered by this manufacturer. For the booklet, write Dept. MPM, Pyramid Mouldings, Inc., 5365 W. Armstrong Ave., Chicago 46, Ill.

Rust Resistant Coolant

A coolant that is said to stop rust, resist rancidity, and reduce causes of dermatitis, has been introduced. The coolant is also said to stay clean even on cast iron, give longer tool life, work at the highest speeds and feeds, and give the best dimensional control. For further information, contact Dept. MPM, S. C. Johnson & Son, Inc., Racine, Wis.



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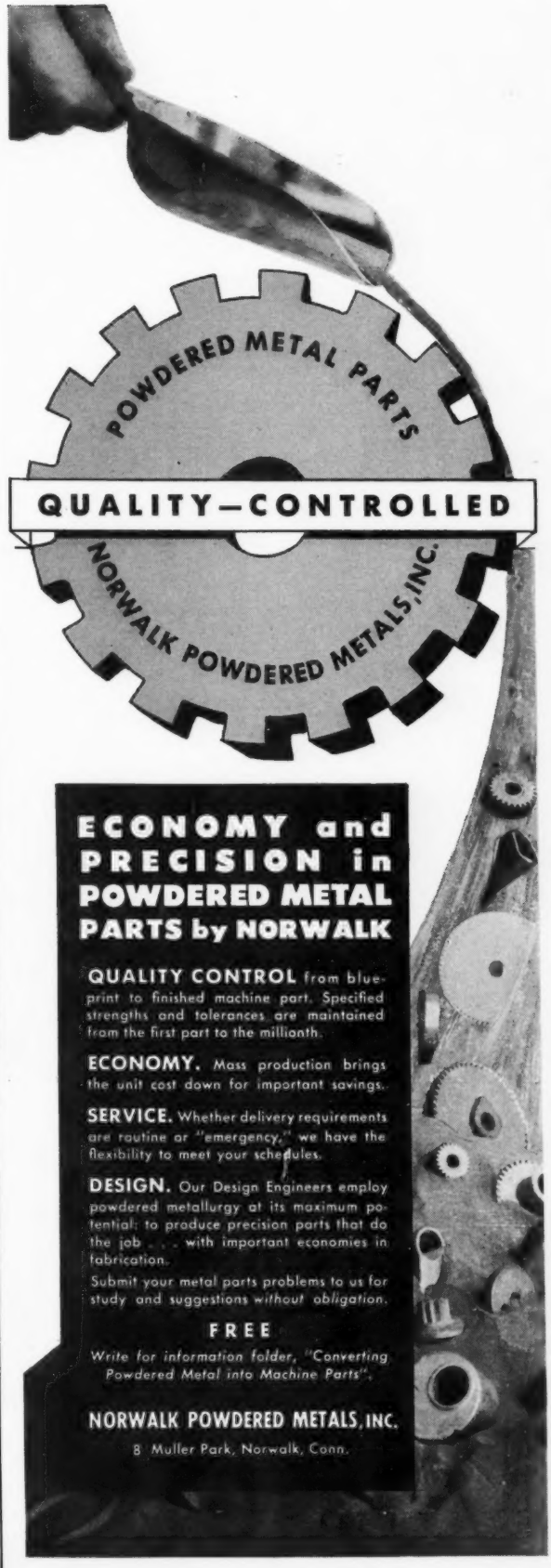

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QUALITY CONTROL from blueprint to finished machine part. Specified strengths and tolerances are maintained from the first part to the millionth.

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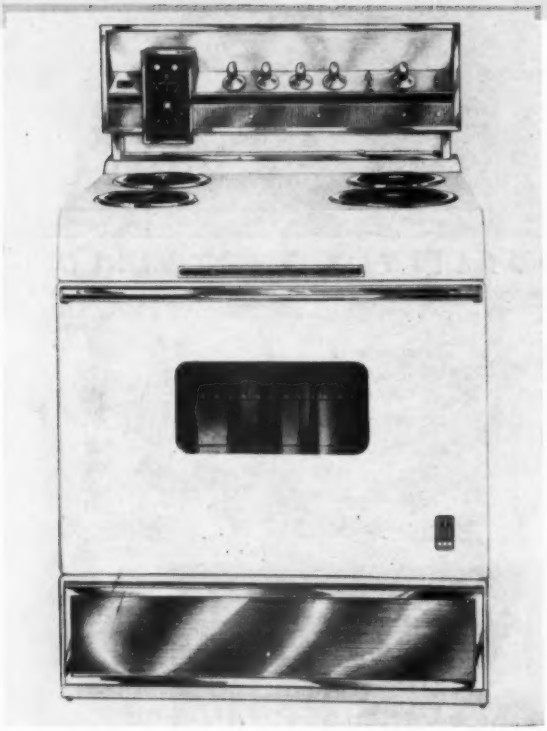
GENERAL STEEL WARES . . . another user of PERMA-VIEW® WINDOWS



A great majority of the leading manufacturers of ranges (both free-standing and built-in) now use PERMA-VIEW windows to enhance the appearance and convenience and economy of their products. During the past few years the demand for "visible baking" has contined to grow. This "No-Fog" window is the best and most economical answer to this demand.

The PERMA-VIEW window is pre-engineered and comes to you ready for immediate installation in your range, "out of our carton into your door." It is mechanically sealed to prevent infiltration of vapors and to eliminate "fogging." Let our specialized production lines serve as a part of your sub-assembly facilities. If you do not use a window, if you make your own window, or if you buy your window from another source, we suggest you phone or write us for complete details on the ease and economy of adding this proven sales feature to your new ranges.

ROUND

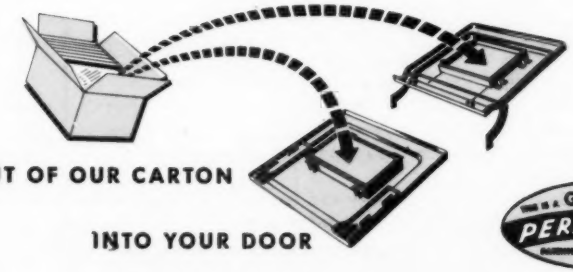
SQUARE

RECTANGULAR

TRAPEZOID

We can manufacture any shape, any size, any thickness to meet your engineering requirements. Alternate methods of attachment may be used.

GENERAL STEEL WARES, LTD.
one of the
83 leading range manufacturers
using
PERMA-VIEW oven-door windows



OUT OF OUR CARTON

INTO YOUR DOOR

THE U.S.A. GENUINE PERMA-VIEW NON-FOG

MILLS PRODUCTS INCORPORATED

1015 WEST MAPLE ROAD • WALLED LAKE, MICHIGAN

Prize winner! This outboard motor container was one of our ten award-winning designs at the Fifth Annual Fibre Box Competition.

Outboard motor makes its maiden voyage in this new container by International Paper

Packing an outboard motor is a tough, complex job.

At least it *was*—until International Paper created this corrugated container for Mercury outboard motors. The inner packing is made of pre-assembled die-cut sheets. The motor fits snugly in place. It's cradled and cushioned in shipment. Judges at the Fifth Annual Fibre Box Competition gave it a Silver Award.

The same design and manufacturing ingenuity goes into every International Paper shipping container. And every container gives you these 7 *extra values:*

1. **First-class engineering.** Truly creative packaging by the same team that originated the tube-and-cap design, now standard in the industry, and many others.

2. **Time-proved boxmaking skill:** several hundred million containers annually.

3. **Built-in savings.** Maximum strength, least weight, best cost-saving design.

4. **Convenient delivery:** 19 strategically located box plants. (Plants 20 and 21 are now under construction.)

5. **Virgin fibre** Gator-Hide® kraft for greatest strength, smooth surface, uniform color.

6. **Fair prices** in line with top quality.

7. **A dependable source of supply.** The *only* containers backed by the full resources of International Paper.

See your Container Division packaging expert. He's a good man to know.

Container Division INTERNATIONAL PAPER New York 17, N. Y.

safe transit

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editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

Air Transport Assn. To Work With NSTC

Recognition of the National Safe Transit Committee received new support recently when an important carrier group announced its endorsement of NSTC's pre-shipment testing and certification program.

At a meeting of the Cargo Forms & Procedures Committee of the Air Traffic Conference, Air Transport Assn. of America, in Washington, D.C., the in-transit damage prevention activities of the NSTC were reviewed and given unanimous approval. NSTC's pre-shipment testing program and its provision for carrier cooperation through identification of the packaged product with the Safe Transit label was described by Ray Brady, United Air Lines, chairman of the Packaging and Materials Handling Sub-Committee, and John Hillgoth, assistant to the director, Cargo Traffic, Air Traffic Conference.

Following a review of NSTC's history of cooperation with surface carriers, and after inspecting the lists of certified manufacturers and testing laboratories, the committee unanimously recommended that complete information about the NSTC program be distributed to personnel of the Air Freight Sales, Air Freight Claims, and Packaging Committees of the Air Transport Assn.; that the monthly claims prevention bulletin, issued by the Air Traffic Conference to all scheduled air carriers, be utilized to transmit NSTC information and materials; and that a cooperative working relationship with NSTC be maintained.

The Cargo Forms and Procedures Committee also pledged to conduct a continuing survey of Aircraft Claims documentation to determine whether the NSTC program could be utilized to further advantage.

Three-Tray Stock Carts

These three-tray stock carts are designed for easy movement of bulky and package items, and have a variety of

uses. Up to 500 pounds can be handled by one man. The carts are available from Bay Products, Philadelphia, Pa., in either a 16-inch by 30-inch tray size, or a 24-inch by 36-inch size. Construction is all steel with a green baked enamel finish.

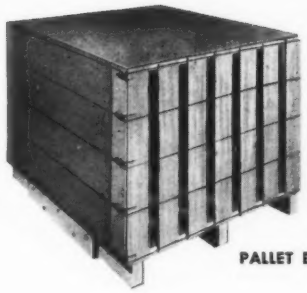
Pallet Standardization Announced

J. E. Wiltrakis, Western Electric Co., Kearny, N.J., has stated that the recently-achieved standardization of pallet sizes is expected to result in major economies in the packing, storing, and distribution of goods. Speaking before the 10th National Conference on Standards sponsored by the American Standards Assn. in Detroit Oct. 21, Wiltrakis said that, "Instead of the more than 300 pallet sizes now in use, the new standard provides a series of only 11 pallet sizes . . . eight rectangular and three square.

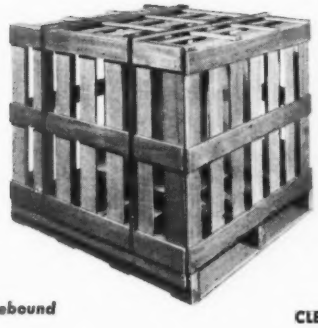
Among the objectives of the standard are maximum efficiency, economy, and flexibility in the use of pallets between rail, truck, maritime, and air transport services. The speaker visualized standard pallets as a basis for integrated distribution and storage systems.

Pneumatic Sealer Has Pistol Grip

This pneumatic sealer features a pistol grip that is said to enable one to seal ¾-inch steel strapping with one hand. It weighs only six pounds and operates through compressed air. For added speed, the sealer may be used with an air tensioner also made by this manufacturer. For further information, contact Dept. MPM, Signode Steel Strapping Co., 2600 N. Western Ave., Chicago 47, Ill.



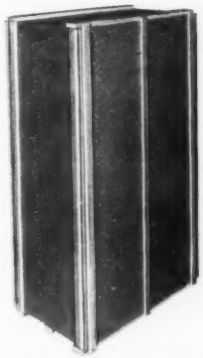
PALLET BOXES — *Wirebound*



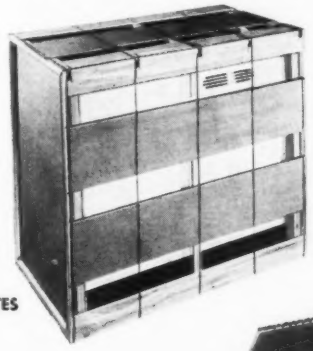
PALLET BOXES — *Hinged Corner*

CLEATED BOXES

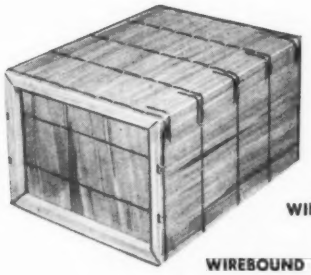
We make 'em all



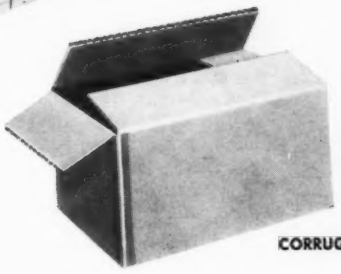
E-Z PAK CLEATED CORRUGATED
(Watkins Type)



WIREBOUND CRATES



WIREBOUND BOXES



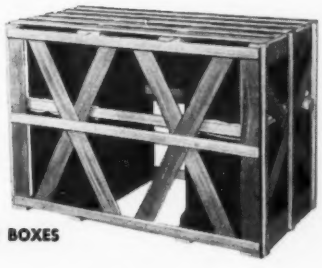
CORRUGATED

you can be sure . . . .

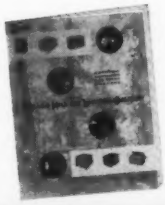
that recommendations from Chicago Mill are based on impartial, unbiased decisions because we manufacture the most diversified line of shipping containers in the country!

Materials used include—

Plywood • Craveneer • Corrugated • Veneer • Resawed



HINGED CORNER CRATES OR BOXES



FREE! *Illustrated catalog showing the various types and applications of Chicago Mill containers, Chicago Mill's services.*

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — Chicago 3, Illinois

PLANTS

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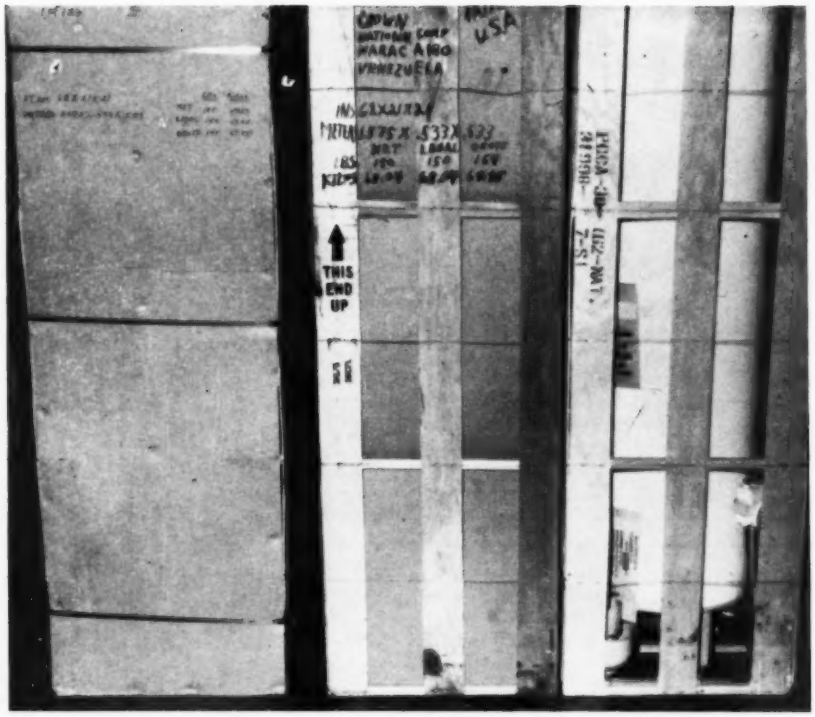
- GREENVILLE, MISSISSIPPI
- HELENA, ARKANSAS
- ROCKMART, GEORGIA
- TALLULAH, LOUISIANA



The comparison in packages is clearly indicated in this photo. At left is the export package now in use. In the center is the earlier version, and at the right is the domestic container, basis for the export package.

MPM EXCLUSIVE FEATURE

The water heater package for export now in use at A. O. Smith's Permaglas Div., Kankakee, Ill., can best be summarized in one word. . . evolution.

Originally, the company used a wirebound wooden container with a heavy waterproof paper placed over the product and inside the container. Then, a piece of cardboard was placed across one side of the top section of the container to provide a smooth stenciling surface.

Now, the regular domestic wirebound container is covered with heavy (350 pound) corrugated carton board on all four sides and on the top. The corrugated board is fastened with heavy staples, after which metal straps are applied to the top, center, and bottom of the container. All that remains from that point is for lettering and identification to be applied for export purposes.

Some standard sizes of corrugated are bought, but for out-sizes, the corrugated board is fabricated in the packaging section. Packaging for export is done in the warehouse section of the plant.

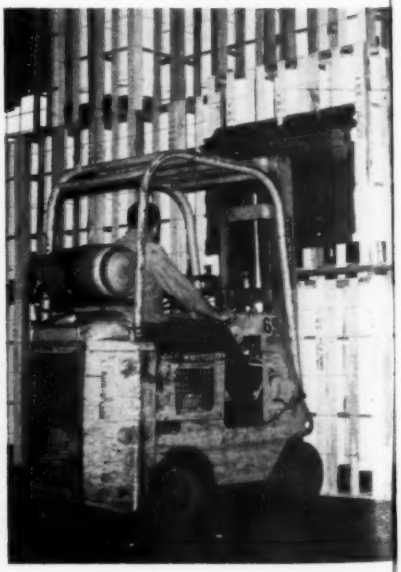
Note: A. O. Smith continues to use the National Safe Transit testing pro-

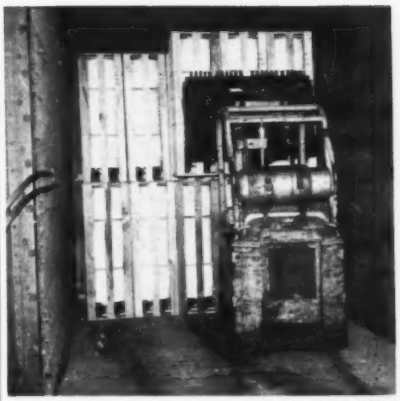
Domestic water heater pack adapted for export

A. O. Smith uses heavy corrugated board fastened with steel strapping to provide export protection

MPM PHOTOS

(Below) — Two turntables provide for easy handling of assembled water heaters at the start of the packaging line. (Center) — A wirebound container is placed around the water heater after it passes the turntables. Average time for crating three of these 65-gallon water heaters is one minute. (Right) — The LP gas-operated lift trucks have a gripping device, designed by A. O. Smith Corp. Engineers, which makes it possible to pick up three standard-size water heaters at one time.





MPM PHOTO

The railroad car is loaded five abreast and double-tiered. One truck operator brings in a series of three water heaters, and the next man brings in two.

gram and will soon be using containers pre-imprinted with the Safe Transit emblem.

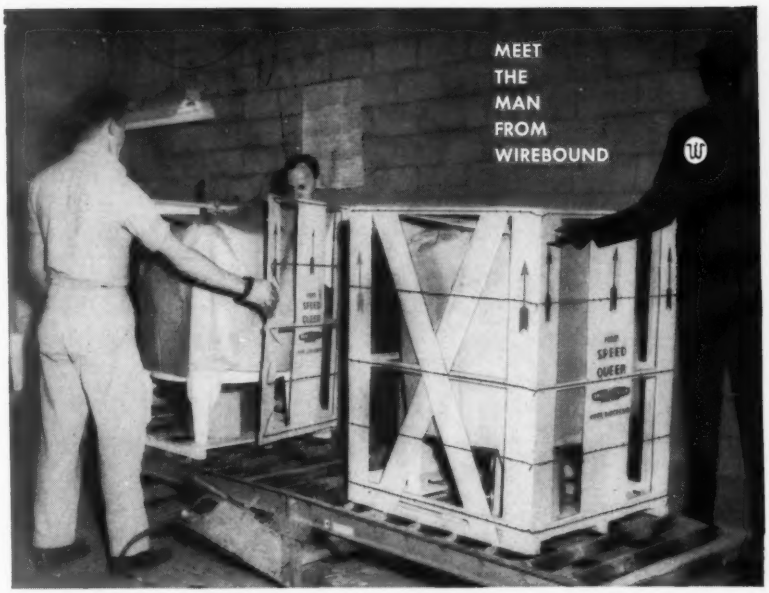
The domestic container, basis for the export package, is of wood construction and wirebound. As the water heaters come off the production lines, they approach two turntables. One turntable runs any inspected rejects off to a repair station; the other turntable is necessary because one line of heaters must be turned from its normal position on the assembly line.

As the product approaches the crating line, a top is put on which conforms to the wooden skid carrying the water heater. The wrap-around is pulled around the water heater with two men working on each container. Average time for crating the large-size, 65-gallon gas water heaters is three per minute.

The water heaters are loaded into railroad cars either directly from the packaging conveyor or from loading dock stock—what is known to the lift truck operators as "docked" heaters. The LP gas-operated fork lift trucks have a special handling device, designed by A. O. Smith Corp. engineers, which picks up three water heaters of standard size at a time for car loading.

In loading, one lift truck operator brings in a series of three, the next man two, loading the heaters in the railroad car five abreast and double-tiered. Standard 20-gallon water heaters are loaded 220 to a car; the same car takes 200 30-gallon water heaters. Utilizing only one fork truck operator, the car can be loaded in approximately 35-40 minutes.

With a 220-heater load, 692 pounds of dunnage is used in the car. About 25-30 minutes is required for the bulkheading. Some dunnage-free cars are also being used.



"Appliances get there *right* in Wirebounds" ...says Speed Queen

"Wirebounds have no equal in getting our washers and dryers to dealers in top condition," reports Mr. R. M. Cornwall, director of purchases for the Speed Queen Division of McGraw-Edison Co., Ripon, Wisconsin. "The package development assistance provided us by the Man from Wirebound has helped us obtain three-way improvement of shipment protection, warehousing and packing."

Superior shipment protection. Wirebounds take the bumps and squeezes of shipment better than other containers. Their construction eliminates "hidden" damage.

Economical warehousing. Wirebounds stack high and safe . . . multiply warehouse floor space many times. Their strength makes possible maximum use of lift trucks.

Fast, secure packing. Washers and dryers are first fastened to a crate base and dust wrapped. A one-piece wrap-around section is nailed to the base. Seconds later the lid is fastened into place, with hardly a pause in production.

Call in your Man from Wirebound. He will gladly study your methods . . . submit package samples. There is no obligation or cost.

Send for Free informative booklet, "What to Expect from Wirebounds"

IT GETS THERE *RIGHT* IN
Wirebound
BOXES & CRATES

WIREBOUND BOX MANUFACTURERS ASSOCIATION
Room 1461 222 West Adams St., Chicago 6, Ill.

☐ Please have the Man from Wirebound call on me

☐ Please send FREE booklet "What to Expect from Wirebounds"

Name_____ Title_____

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. . . . . IN 1960
as in 1959
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since 1901

We will continue to be more interested in making possible even better procelain enameling results for our present FRIT customers than we will be in developing new customers.

Naturally this does not mean that we are not interested in new FRIT customers—but it does mean that our *main objective* is to better serve our present customers.

Ing-Rich ever improving "Know How" is the result of the day in and day out cooperation between our topflight ceramic engineers and the practical technicians in our own large enameling plant when they have to prove their case under practical working conditions.

This Frit and porcelain enameling "Know How" has proved right valuable to Ing-Rich Frit Customers—and will prove even more valuable as we continually strive to learn and improve.

Pioneer Producer of
LIFETIME
Porcelain Enamel Products

INGRAM-RICHARDSON, INC.
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA

ING-RICH
FRIT

NEMA → *from Page 73*

president of The Thomas & Betts Company, was elected president of NEMA. W. C. Wichman (Hotpoint) was elected vice president. A. D. R. Fraser of Rome, N. Y., president of Rome Cable Corporation, was elected treasurer.

MPM PHOTO

N. J. MacDonald, newly-elected president of NEMA, *and Joseph F. Miller, managing director.*

In addition to the election of officers for the coming year, the following *new* members were elected to the NEMA board of governors:

For term ending 1962

D. E. Allen, vice president-sales
Anaconda Wire and Cable Co.
Hastings-on-Hudson, N. Y.

John Brown Cook, president
Reliable Electric Company
Franklin Park, Ill.

F. E. Helm, president
The Reliance Electric & Engineering Co.
Cleveland, Ohio

Niels C. Miller, president
treasurer and general manager
Miller Electric Manufacturing Co., Inc.
Appleton, Wis.

P. J. Sullivan, president
Arrow-Hart & Hegemann Electric Co.
Hartford, Conn.

Incumbents who have been re-elected to serve for three-year term ending in 1962 are:

C. W. Higbee, assistant general manager
Electrical Conductor Division
Kaiser Aluminum & Chemical Corp.
New York, N. Y.

F. F. Look, president
Allen-Bradley Co.
Milwaukee, Wis.

H. C. McElhone, vice president and general manager
The Lamb Electric Co.
A Div. of American Machine & Metals, Inc.
Kent, Ohio

J. W. McMullen, vice president and general manager
Power Equipment Div.
Allis-Chalmers Mfg. Co.
Milwaukee, Wis.

J. J. Mullen, Jr., president
Moloney Electric Co.
St. Louis, Mo.

D. J. O'Conor, Jr.
president and general manager
Formica Corp.
(A wholly owned subsidiary of
American Cyanamid)
Cincinnati, Ohio

J. L. Singleton, senior vice president
Industries Group
Allis-Chalmers Mfg. Co.
Milwaukee, Wis.

Chris J. Witting, vice president
Westinghouse Electric Corp.
Pittsburgh, Pa.

Steelcase desks

→ *from Page 60*

Tops move hot directly from the oven to the linoleum application station, thereby eliminating one operation in the former manufacturing process. Previously, the painted tops were stored, then reheated for linoleum application. A plastic laminate top material is also used on desk and table tops.

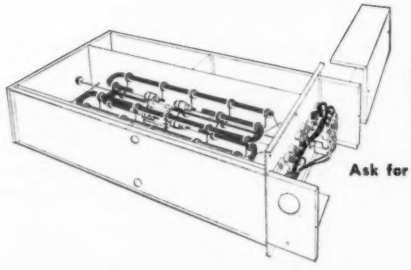
Quality control is stressed throughout all phases of production at Steelcase. The finishing department uses a "balanced" air control system to keep it dustfree. Two air supply rooms are located on the plant roof. Each pumps 75,000 cubic feet of air into the plant department per minute. This air also passes through constantly-changing filters. With 150,000 cubic feet of air coming into the room, and 146,000 cubic feet being exhausted, all drafts are outward, and there is no seepage of dust and dirt into the pressurized room.

Ed Fritz, plant engineer, states that "We used to have trouble maintaining a uniform pattern on our metallic finishes because of the variation in spraying techniques between different hand sprayers. We can now maintain pattern uniformity on a wide variety of parts consistently, day after day. We are also able to maintain a uniform 1.5-mil thickness on all parts, which is especially important to us on the wearing surfaces, such as the corners of the desk pedestal and drawer fronts."

PLAGUED....
BY THE TERATISM OF SUPPLEMENTAL HEAT?

RELAX!
...SHIP HIM TO THE TUTTLES IN TECUMSEH!

THE TUTTLES HAVE WRESTLED WITH THIS TERATISM BEFORE. (NO ONE HAS MORE EXPERIENCE IN THIS FIELD.) IN 27 ENGAGEMENTS, SO FAR—SCORE: TERATISM-0—TUTTLES-27. DO WHAT SO MANY OTHER MANUFACTURERS ARE DOING, JUST DESCRIBE YOUR NEEDS TO THEM AND TURN 'EM LOOSE. THE ODDS ARE THAT THE ANSWERS THEY COME UP WITH ON DESIGN, PRICE, PERFORMANCE AND DELIVERY WILL ELIMINATE THIS PARTICULAR NIGHTMARE FOR YOU.



Heating elements designed and manufactured with or without controls.

Ask for our new 8 page descriptive brochure.

MAKE THAT PHONE CALL NOW
TO TECUMSEH, MICHIGAN
(PHONE NO. 1008) AND GO BACK TO THE CAREFREE LIFE!

"the house of quality"

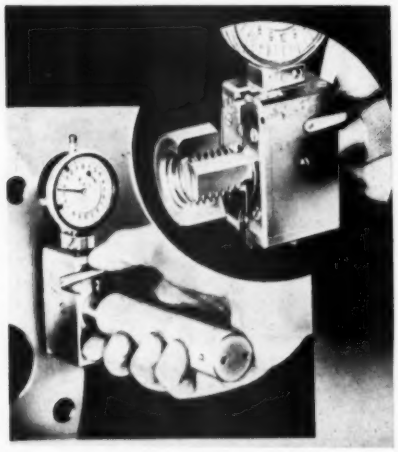
H. W. TUTTLE & CO.
TECUMSEH, MICHIGAN
Manufactured and distributed in Canada by CRONAME (Canada) Ltd., Waterloo, Quebec.

NEW

SUPPLIES & EQUIPMENT

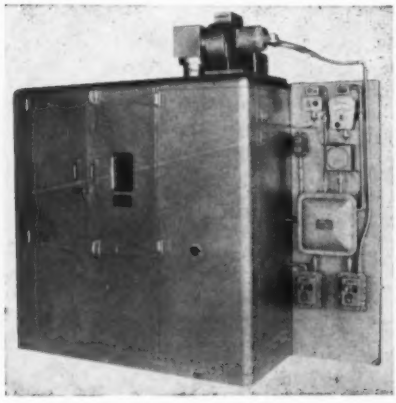
Internal Thread Inspector

A dial thread plug gage, which is said to speed up the inspection of internal threads and perform the GO and NO GO inspections in one operation, has been introduced. The measuring instrument employs three measuring jaws representing master thread gages, one of which is retractible between the other two. The jaws can be inserted into the thread to be checked without any threading in and out. For further information, contact Dept. MPM, Mahr Gage Co., Inc., 274 Lafayette St., New York 12, N.Y.



Improved Laboratory Oven

An improved laboratory oven offers accurate temperature control to 850° F. The oven is electrically heated and can be adapted to use steam or hot water at available pressures. Two swinging doors provide an oven opening of 37 inches by 37 inches. A heavy duty observation glass window is inserted in one door. According to the manufacturer, the oven has new safety controls to enlarge its usefulness in laboratories. For further information, contact Dept. MPM, Despatch Oven Co., 611 S.E. 8th St., Minneapolis, Minn.

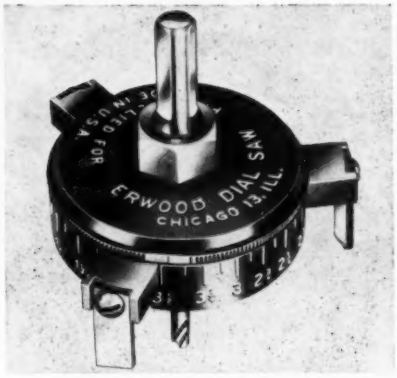


Chemical Repairing Kit

An epoxy-polyamide chemical compound is said to be applicable for virtually unlimited usage in industrial repairing. The compound is also said to be usable with metals, ceramics, and most plastics. A repair kit consists of a can containing a white base and another can containing a black hardener. Equal parts of the base and hardener are mixed to obtain the repair compound. For further information, contact Dept. MPM, Williamson Adhesives, 8220 Kimball Ave., Skokie, Ill.

Calibrated Dial Saws

Announcement has been made of two models of calibrated, adjustable dial saws or hole cutters. The models incorporate three special single cutting edge cutters which adjust simultaneously to the proper hole diameter. The adjustable range is from 1⅛ inches to 3½ inches in diameter. For further information, contact Dept. MPM, Erwood, Inc., 1770 Berteau Ave., Chicago 13, Ill.



Safety Switch

A "tip-off" safety switch (the contacts open when the switch is tipped more than 45° from vertical) for portable room heaters and other portable electrical appliances has been introduced. The actuator of the switch contact is a pivoted, steel pendant that tends to maintain a vertical position at all times. It is available with spade-type or screw-type terminals. For further information, contact Dept. MPM, Bryant Electric Co., Bridgeport 2, Conn.

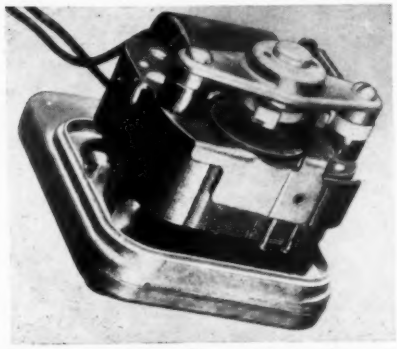
Latex For Metal Primers

Development of a new latex with low foaming advantages for use in metal primers has been made available in commercial quantities. This latex for non-flammable primer coatings is particularly suitable for the automobile industry, and for steel drums, machinery, metal furniture, and construction.

Known as Dylex KCD-141, the product has undergone tests which are said to have resulted in a primer that has less foaming, improved corrosion resistance, and high impact resistance. For further information, contact Dept. MPM, Plastics Div., Koppers Co., Inc., 801 Koppers Bldg., Pittsburgh 19, Pa.

Instant Braking Motor

Split-second braking on unreduced and gear reduced, sub-fractional hp motors has been developed. This is said to provide instantaneous control in vends as well as in other applications such as valve-closing devices and displays. The motor brake features a lever-type, pivoting design which reacts to stop the motor revolutions the instant the electrical impulse is ended. For further information, contact Dept. MPM, Speedway Div., Thor Power Tool Co., 1421 Barnsdale Rd., LaGrange Park, Ill.



Sealed Thermostat

Development of a series of hermetically-sealed, three-phase precision thermostats, Series 2862 for wye-connected circuits, has been announced. They are actuated by snap acting, bimetal discs. For further information, contact Dept. MPM, Metals & Controls, Division of Texas Instruments, Inc., 34 Forest St., Attleboro, Mass.

Epon Curing Agents

Simple, convenient equipment like the gun, pot, and compressor shown may be used to spray 100 per cent non-volatile, epoxy resin surface coatings without fear of clogging, as a result of a new development of two new curing agents—Epon Curing Agents H-1 and H-2. These agents are said to provide a much longer usable pot life with liquid epoxy resin than was possible previously, and eliminate the need for complex metering and mixing spray equipment. It is also reported that these coatings cure rapidly at normal temperatures and under conditions of high humidity. For further information, contact Dept. MPM, Shell Chemical Corp., 50 W. 50th. St., New York 20, N.Y.

PEI forum

→ *from Page 47*

James H. Rice, Binks Mfg. Co., introduced a simplified mechanical memory wheel for spraying porcelain enamel. In application, parts with varying silhouettes unevenly spaced on a conveyor are sensed at a position remote from the spray zone. The memory wheels recall the shape and position of the parts and release the information to the spray gun at the proper time. The guns are turned on only when there is surface to be coated, and turned off when transversing between parts or across openings in the parts themselves.

Development and application of a flame spray method known as the Rokide Process was the topic for R. J. Westerholm, Norton Co. The process employs pure oxides which are formed on the surface of metals to protect the base metal against erosion and to insulate thermally and electrically. Said Westerholm, "It has been shown that Rokide coated surface will withstand repeated blows of a ball peen hammer and the impingement of a welding torch until a temperature in excess of 3600° F. is reached."

Porcelain enamel on mufflers

New markets for porcelain enamel were presented by William E. Pierce of the Porcelain Enamel Institute. Essentially, Pierce reasoned that, because of the varied properties of porcelain enamel, future applications for consideration might be on automobile and farm tractor mufflers, as protection for distribution transformers, and in the field of electroluminescense as an insulator. In the latter application, the dielectric properties of porcelain enamel can be put to good use.

Current PEI projects were introduced by H. R. Spencer, Jr., Erie Enameling Co., who reviewed the standards and methods for selection of the 47 colors for the architectural color guide; Harold C. Wilson, Vitreous Steel Products Co., who explained that a new manual on recent developments in ball mill grinding will be released shortly; and J. C. Richmond of the National Bureau of Standards, who introduced a distinctness-of-image gloss meter.

A. L. Sopp, Jr., Aluminum Co. of America, spoke on the mechanical properties of porcelain enameled aluminum and introduced two new aluminum alloys, one of which was heat-treatable, the other non-heat-treatable.

The evaluation of metal cleaners before enameling provided the topic for William T. West, Pennsalt Chemical Corp. West presented a number of widely-used tests, including the waterbreak, acidification, and copper immersion tests, but pointed out that no laboratory evaluation will be successful until soils are thoroughly identified and classified.

The importance of enameling furnaces was stressed by S. C. Burkhalter, Lindberg Engineering Co. He warned that the enameler must make sure that the unit performs with a proper balance of heat and heating ability, and that study and maintenance of the furnace is necessary to good enameling.

B. Sweo, Ferro Corp., described a porcelain enamel on steel test which showed that, as the amount of moisture in the furnace atmosphere is increased, the amount of gas which can be extracted from the furnace is also increased. In the test, carbon gas was given off from the steel, and hydrogen from the enamel.

The first paper of the last session was given by J. W. Vicary, Ervite Corp. He spoke of his company's use of a new furnace for multi-temperature operations. The electric, continuous, straight-through furnace is expandable, portable, simple in design, and has a capacity of 1,200 pounds per hour.

G. B. Hughes, Frigidaire, presented a program to lower the firing temperatures of all porcelain enamels to the 1400-1450° F. range. Frigidaire's purpose was to reduce distortion of parts being enameled while maintaining the requirements of high standards of quality, and with no change in the production rates or furnaces. The changeover was accomplished from Sept., 1958 to Sept., 1959, and Hughes covered each step from lab tests to final cover-coat operation.

Total registration at the Forum was 245. Next year's Forum will be held at the University of Illinois in Champaign-Urbana, Nov. 2-4.

**See page 52 for a survey report on one-coat enameling.*

Current PEI projects were discusssed by J. A. Morris, (left) Coors Porcelain Co., and J. C. Richmond, (right) National Bureau of Standards. Between these two is G. H. Spencer-Strong, Pemco Corp., chairman of this symposium.

Speakers on the base metals and preparation symposium included (l. to r.): L. L. Jaffe, Frigidaire; D. B. Tolly, General Electric Co.; A. L. Sopp, Jr., Aluminum Co. of America; and W. T. West, Pennsalt Chemical Corp.

The process controls and tests symposium consisted of (l. to r.): D. B. Tolly, General Electric Co.; S. C. Burkhalter, Lindberg Engineering Co.; Heinz Seiler, Chicago Vitreous Corp.; M. Bozsin, Ferro Corp.; G. E. Miller, Ferro Corp., and chairman; B. Sweo, Ferro Corp.; and R. J. Reed, North American Mfg. Co.

The heat pump

→ *from Page 29*

Evaporator coil face area is 4.5 square feet, and it has four rows.

All of Mueller Climatrol heat pumps use F-22 refrigerant and are air-to-air. The heat pump thermostats have a range of 56° to 90° F. for heating, and 60° to 94° F. for cooling. The differential is adjustable. Controls are manual or automatic.

Inasmuch as the heating capacity of a heat pump decreases faster when outdoor temperatures fall below 20° F., in almost all areas, with the exception of the extreme South, supplementary heat is required. Careful evaluation of the heating requirements of the home are necessary to determine the supplementary heating needs.

Supplementary electric resistance heating packages (Type 316) are designed specifically for the heat pump line. The heating packages are available in 8 and 12-kw capacities which deliver 27,280 and 40,920 Btu hr.

The initial installation cost of the Mueller heat pump is comparable to other central year 'round heating and air conditioning systems. Operating costs will depend on the number of degree days and electric rates, just as in the case of any other heating and cooling system.

"When we thought about developing a heat pump line, we had to make certain decisions," said H. P. Mueller, Jr., executive vice president of Mueller Climatrol. "Early in the game we decided to utilize the principles of air-to-air for heating and cooling, rather than the other methods. We felt that water-to-air would not be practical for large scale production with the great water shortages facing our nation. Ground-to-air was voted down because of the cost of burying the system's piping. Air-to-air seemed to be the most logical choice, and we're glad we made it!"

Mueller continued, "We're speaking of residential and small business markets. In larger commercial establishments, the systems other than air-to-air systems can be very practical. For example, the Worthington Corporation, of which we are a division, has plans to put in the world's largest heat pump in an Australian building. The unit will supply 1,400 tons of summer cooling and 10 million Btu hr. of winter heating. The building is located near a harbor from which water will be used for cooling and heating."

features

1 POWER SUPPLY K.O. — 1⅜" diameter hole in top cap.

2 LIMIT CONTROL — protects elements from overheating. Factory set for maximum allowable rise through unit.

3 LOW VOLTAGE K.O. — provides access to cabinet for thermostat connection.

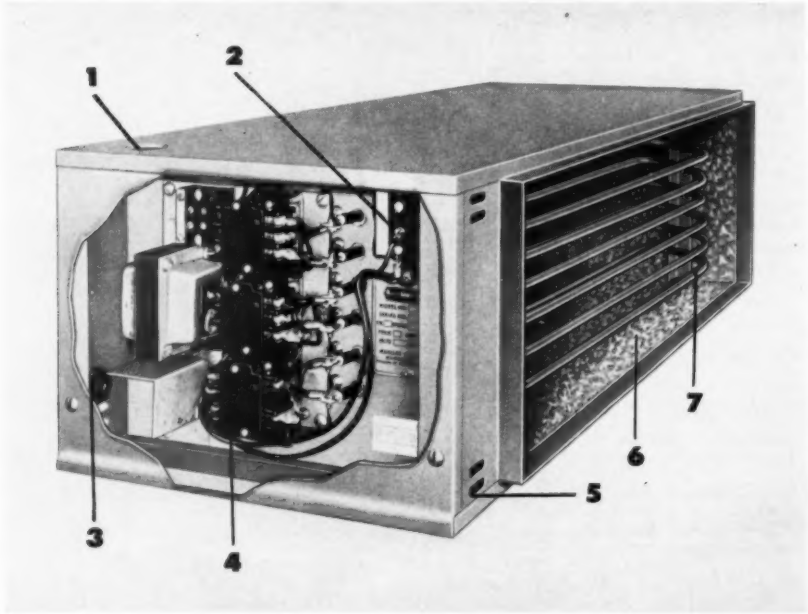
4 SEQUENCING RELAY — energizes heating elements in 4 KW increments.

5 AIR VENT LOUVERS FOR CONTROL PANEL AREA — provides ventilation for internal panel heat.

6 RADIANT SHIELD — liner acts as a radiant shield and provides smooth unimpeded air flow through unit.

7 HEATING ELEMENTS — tubular sheathed, 2 KW each. 4 elements in the 316-1-27, 6 elements in the 316-1-40.

The supplementary electric heat package (Type 316-1) is designed for use with the Type 315 packaged heat pump or the Type 318-317 combination remote heat pump units. Both units utilize tubular sheathed elements which are 2 kw, or 2,000 watts, each. The element's operation is sequenced by a control panel which energizes the heating elements in 4 kw increments.



Observations on cost reduction

→ *from Page 70*

several months of production operations on pilot equipment. We did realize the expected reductions in material costs, but our labor costs increased about 25 per cent. Recently, we have had to forsake the automatic process and return to manual spraying operations because of a change in panel design and the fact that, to date, we have been unable to satisfactorily apply cover-coat enamel direct on steel by the flow-coat method of application. Neither of these problems were anticipated when the automatic system was adopted, and neither problem could be foreseen several years ago.

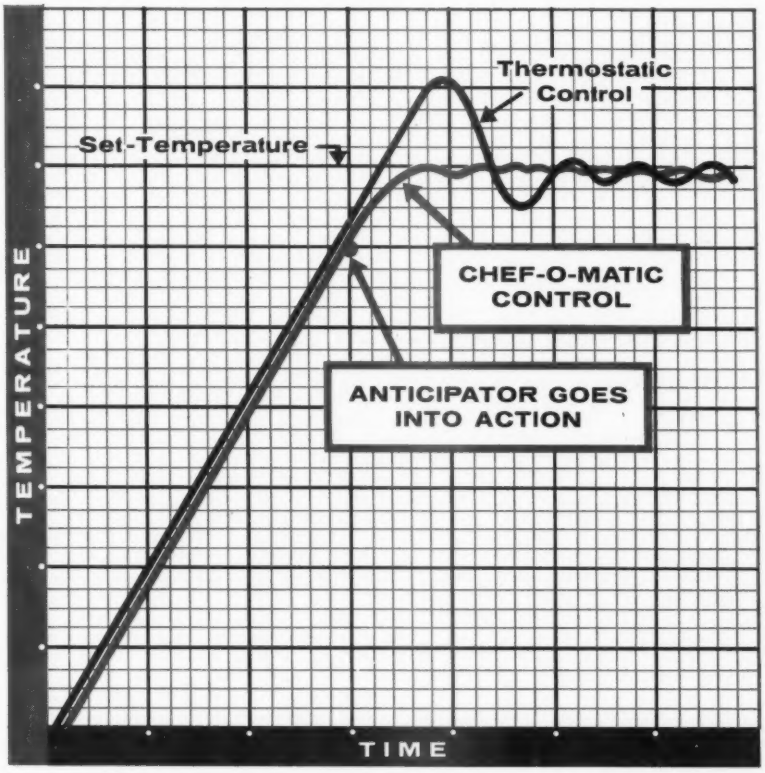
During the past year, we have experimented with the possibility of electrostatic spraying of rangetops with the idea in mind that a simple installation in existing spray booth equipment would perform with satisfactory results. That problem of design of parts was one of our major roadblocks. A set-up suitable for one design was not satisfactory for another design. Some designs required hand spraying ahead of the electrostatic unit, and this labor alone was sufficiently great to affect our decision against the electrostatic method of operation. Other factors were:

1. Parts would have to be batched for processing — this would not be a satisfactory arrangement for flow of material through the shop and into assembly operations.
2. Equipment was unreasonably difficult to control.
3. It was not economically practical to revise existing spray booth to meet controlled atmospheric conditions required.

We have been convinced that there is no simple method to spray electrostatically, but we are also sure that there are some real cost reductions possible in this area of operation, and we are investigating other approaches to the problem.

Adapted for Metal Products Manufacturing from a paper presented at the 20th Annual PEI Shop Practice Forum.

The CHEF-O-MATIC THINKS AHEAD for Closer Surface Element Temperature Control



Unlike conventional thermostatic controls, the Chef-O-Matic thinks ahead and tapers off temperature build-up in time to avoid overshooting the allowable maximum.

Thus, the cook can have complete confidence that sauces and other foods will not be spoiled by excess cooking temperature.

OTHER CHEF-O-MATIC FEATURES

- Infinite number of precision settings, on a linear scale, in either direction of knob rotation
- Temperature control range—100°F to 450°F
- Single unit can control any wattage element up to 3500 watts, including split coil types
- User safety assured by low voltage system between senser and responder switch
- Rugged senser—withstands up to 800°F
- Automatically reduces wattage when cooking utensil is taken off surface element

Write for detailed specifications.

KS

KING-SEELEY CORPORATION

ANN ARBOR, MICHIGAN

8317

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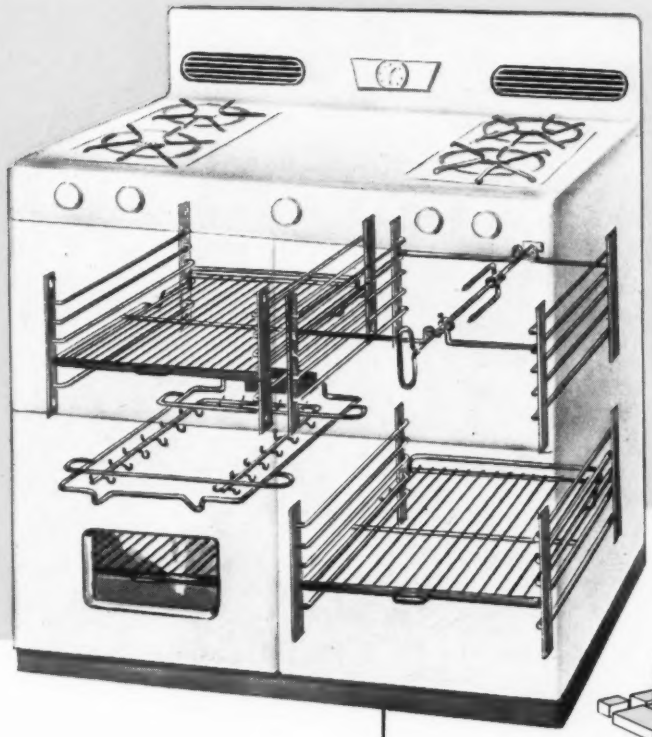
MANUFACTURING

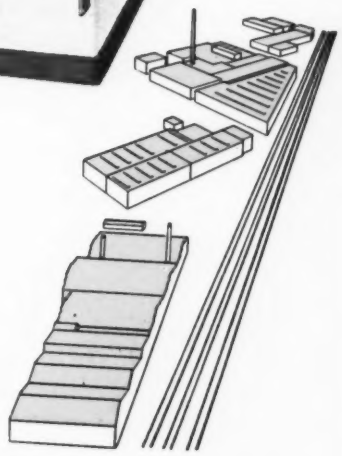
I need one more man to complete my management team for my nationally distributed home appliance business located in N.Y.C. If you are a manufacturing, shirt sleeve, cost conscious executive with broad shoulders (an ME or IE) who has the courage to leave your present job because you are confident you can handle Production • Purchasing • Material Control • Labor Relations • and Plant Engineering, and know how to blend material, people, and facilities to turn out a consumer appliance product, you should qualify.

I'm not an easy boss to work for, and my standards of performance are high, but so are the rewards. A manufacturing VP can start at approximately $25,000 and more when he proves to be a profit maker.

All replies held in strict confidence.
Box MPM 1620, 125 W. 41st St., N.Y.C.

SHE WANTS MORE THAN .....BEAUTY!





Yes . . . she wants much more than beauty alone. She wants high styling, convenience, exterior attractiveness and—yet she must have the type of product engineering that will guarantee more years of durable, dependable, maintenance-free operation from each working part of her new appliance.

For her sake—and yours—you just can't afford to compromise quality for price at any point along the way. Whether your appliance calls for oven racks, side runners, heating element frames—or refrigerator parts such as shelving, grilles, guards, baskets or trays, why not remember the one experienced source for your welded wire components? Take advantage of Union Steel's half-century of leadership in the design, fabrication and on-time delivery of better, more dependable wire products.

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Union Steel has again expanded its production, engineering, sales and service facilities to guarantee faster, more complete service to you. Four big plants containing the most modern wire-forming and finishing facilities are at your disposal.

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TEP NOW OFFERS BROADER SERVICE AND NEW PRODUCTS

For Appliance and Related Applications

Here is the present line of Tuttle products designed to help you manufacture better electrical products. New in the group are the single position infinite control and the tubular heating element. The Single Position Infinite Control was formerly manufactured and sold by Tuttle & Kift, Inc., and we are pleased to announce our acquisition of the manufacturing and sales rights to this highly efficient control. The Tubular Heating Element was recently designed by us for use in hand dryers. It has many other possible uses. We would welcome the opportunity of working with you on any of your problems involving any one or more of these, or other electrical products. Merely call or write.

1 SINGLE POSITION INFINITE CONTROL

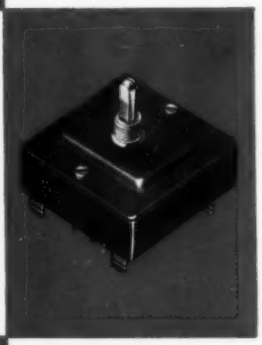
The N-14 Control enables a heating unit to deliver all or any portion of its heating capacity. Proportioning of heating capacity is accomplished by a pre-setting of the control knob, thereby controlling the time of contact dwell. Furnished in various time cycles depending upon your requirements, i.e., from 4 R.P.M. to ½ R.P.M. cycle motors.

2 TOGGLE SWITCHES

The unusual simplicity of the new TEP Toggle Switch design achieved by Tuttle Research Engineers, now provides a dependable, top-quality switch at lower cost. Considerably smaller than comparative switches offering the same variety of contacts, it includes provisions for four-way wiring connections. There are only 11 working parts, and the complete switch weighs less than one ounce.

3 HEAT SELECTOR SWITCHES

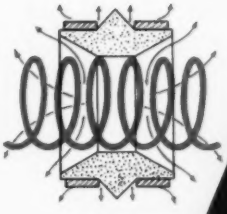
Series 3000 rotary snap-type switches, also manufactured by TEP for electric ranges, air conditioners, space heaters and related applications, feature positive, trouble-free contact action and 7-heat selection. They are available either with or without a pilot light and with different shafts and handles to suit your needs. Write today for sample and quotation.



4 TUBULAR HEATING ELEMENT

This element is ideal for a wide range of applications. It's highly efficient in heat guns, hair dryers, space heaters, hot food vendors, photo print dryers, and other products where air is to be heated while flowing through a tube or nozzle. It can be controlled thermostatically and furnished in ratings from 500 to 2000 watts at 115 or 220 volts.

Cross-sectional view of new TEP insulator and cross-bar design. More space for air circulation assures better heat dissipation, longer wire life.



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